The Builder.

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THE works in St. James's-park are progressing. The iron railing at the west end of what is known as the Enclosure has been put back, in a line parallel *with the front of the Palace. The iron railing* of part of the Green-park, opposite Stafford House, has also been altered, so as to be a continuation of that line, and make the ground opposite to the Palace into a regular form, opening into the Mall, the centre avenue of which will be exactly opposite to the centre of the Palace. The ground enclosed opposite Stafford House will be planted to correspond with that on the opposite side.

The Marble Arch has been taken down to the ground: every block has been numbered, and a drawing made of each course, with corresponding numbers on the blocks, so that they may be exactly replaced hereafter: should it be ultimately determined to re-erect the arch in the Mall near Stafford House, where, with a garden on either side of it, it would seem to form the commencement of the palace grounds, it will be a matter for regret that it was not moved to that position bodily, as might have been done without much difficulty.

In connection with this subject a series of designs for the improvement of the Park and some adjacent edifices have been submitted to us by Mr. Alfred Beaumont, architect. The object of the author is stated to be, to give more importance to St. James's-park, in consideration of its proximity to her Majesty's residence, and, at the same time, to benefit the public. The main features of the plan may be briefly mentioned. Beginning at Hyde-park-corner, the author proposes to convert the arch at the top of Constitution-hill into a royal entrance into the grounds of the Palace, adding a wing on each side of the arch, the eastern wing being for the admission of the public to the park, and the western wing to span Grosvenor-place and bring St. George's Hospital into the composition; to bring forward the marble arch about 200 feet, with a sunk area right and left to the Palace; to form a direct thoroughfare into the Park from St. James's-street by a way through St. James's Palace, the latter being added to and altered externally. This road would be continued across the enclosure, with a suspension-bridge over the water, into Birdcage-walk.

One principal feature in the scheme is to form an opening into the park from Charing-cross, as often urged by us, and it is this to which we would more particularly direct attention. To some of the previous suggestions there are objections: the alterations at Hyde-park-corner and in front of the Palace, for example, involve encroachments on the ground open to the public, against which, although comparatively small, we should feel bound to protest. Again, the proposed new road through St. James's Palace includes the transformation, if not destruction, of the ancient gateway, nearly the only remaining part of Henry the Eighth's original palace. We must not lightly yield our historical memorials. Good modern buildings may (the authorities willing and a proper course adopted) be obtained at any time; but our ancient landmarks for history, prompters of thought, stone story-tellers speaking the mind of earlier periods—the autographs of a nation (so to speak)—cannot be manufactured to order, or recovered when once suffered to fall away: the value of such things to the country cannot be calculated: and they should be watched by the country with the greatest jealousy, and maintained with the greatest care.

We have engraved Mr. Beaumont's design for the entrance to the park from Charing-cross, not because we think, any more than the author, probably, that it is the particular arrangement that should be carried into execution, before any other, for the proposed opening, but to bring the matter prominently before the public, and to show them what a vast improvement such an entrance would be, and, indeed, how much required it really is. It would form the entrance to the avenue leading up to the palace, and would bring into view from the avenue the statue of Charles I., Northumberland-house, and Trafalgar-square.

It would require the removal of the houses between Spring-gardens and Charing-cross, and a few others; but the cost of this would be met in part by the increased value which would be obtained for the ground remaining to be built on, as it would give room for the completion of Carlton-terrace, and provide an eligible site for a block of buildings of similar class, such as are shown on the right-hand side of our engraving.* The low buildings on the left-hand side, next Drummond's Banking House, are intended for fancy shops, to screen the backs of the houses in New-street, without interfering with light or air.

Mr. Beaumont includes in his general scheme the continuation of Pall Mall to the Green-park, by the removal of some houses on the north side of Cleveland-street, the advantage of which was long ago pointed out by us. He also proposes the formation of a lofty and convenient drive through the Horse Guards, in lieu of the present low and confined archway.

The Westminster improvements come naturally into view in any consideration of the means of bettering the approaches to the Palace, but what the commissioners are really doing there we are not in a position to say with certainty. We have been strongly urged, from more than one quarter, to bring before the public the new street which has been opened, and to point out the opportunities it affords for public buildings and private speculators; while, on the other hand, we have received forcible representations, impugning the proceedings of the commissioners, and gravely questioning their fitness for the duties which devolve on them. We may look further into it. Certain it is, that an *enormous* sum of money has been spent, with, at present, very little to show for it.

The want of a standing committee or commission for the improvement of the metropolis, to take advantage of such opportunities as occur, to preserve general concord in improvements, and to check injurious proceedings which are now constantly occurring, is greatly needed. At present, what is done by one party is undone by another, and new buildings are permitted to be put up which must be bought to be pulled down before long. Efforts to *beautify* the metropolis we need scarcely look for: the usefulness of the beautiful is not yet sufficiently felt; but the improvement of thoroughfares and the maintenance of open areas might be expected from the merest utilitarian. Every bad step is followed by a worse. Look at London-bridge: no sooner is a huge building erected to block up the Southwark end of the bridge, than another is commenced, next the Adelaide Hotel, on the City side. Thousands were spent to improve this part of London, to get good approaches and open the river, and now all the advantages gained are about to be sacrificed. Even the new Corporation buildings at Billingsgate appear to us to come nearer to the water's edge than seems desirable. The improvement of the banks of the Thames is much to be desired and often talked about, but the tendency of actual proceedings seems unfortunately quite the other way.

* See page 510.

SOME CONTRIBUTIONS TO THE ELUCIDATION OF THE CONSTRUCTIVE DETAILS OF SANITARY ARCHITECTURE.*

FROM the defective state of our *drains* and *sewers*, the ramifications of which extend in countless lines throughout our large towns, a state of evil arises which in its consequences is fraught with appalling dangers to the health and lives of those who are placed within its influence. Dr. S. Smith says he believes "the immediate and direct cause of fever to be a poison generated by the decomposition of animal and vegetable matters." Now, it is easy to conceive how defective drains and sewers, as well as that abominable contrivance the cesspool, may be said to be producers of fever, when it is considered that the substances arising from the exuviæ of the inhabitants of the houses, as well as the refuse of domestic preparations, are thrown into places, or endeavoured to be passed through drains, from which, owing to their defective construction, they are not speedily removed, but are allowed to remain and decompose, issuing forth from their foul alembics the seeds of disease and death. The following may be considered as a statement of the principal defects of town drainage. "In some places there are only open or surface drains, allowing exhalations freely to rise into the atmosphere, and these often are stagnant, by that more noisome. Even covered drains are often made with insufficient fall or declivity, and so become only extensive cesspools, contaminating the soil around them, and the atmosphere above them. Even with good street drains, there may be defects in the house drains, or in their connection with others, or in the sinks or water-closets: then the supply of water requisite to render the drains effective is often altogether wanting, or is obtainable only at an expense which the poorer inhabitants cannot afford." The few remarks which we are about to offer are on the subject of household drainage. Much has been written of late years, and with considerable effect, in drawing the attention of practical men to the consideration of the subject. In a short article like the present, we cannot be expected to enter into all the details of this subject, the various plans proposed, &c., but our remarks may be useful in directing attention to the essential requisites of effective house drainage.

And first as to the size of the drains. These should evidently be proportioned to the quantity of matter which will have to be conveyed through them. It is somewhat surprising to see the mistakes which were made, not so many years ago, on this point: size seemed to be the great end aimed at. But a "new light" has arisen on the subject: we now perceive that when a drain is too large for the matter which is to pass through it, the end we wish for is only the more difficult to be attained.† When the surface of a drain is extended, the water or fluid-sewage is lessened in bulk, and its motive power diminished; a sluggish movement being the inevitable result. Mr. Guthrie seems to have been amongst the first, who went vigorously to work, to expose the absurdity of the old method, and to introduce a more efficient and scientific system of house drainage. He says, "the grand object is so to proportion the drains that their supply

* See page 446, *ante*.

† Mistakes the other way have been made in recent times, and much inconvenience caused.

of water would at all times be effectual in removing soil, and preventing depositions of all kinds: this, it is clear, could only be done by causing them to bear a proper ratio to the roofage, and the size of tubes through which water is conveyed to the house from which the drain is to be led. Now if, as is almost always the case, the water-pipe of an establishment leading from the main be only half an inch, or say an inch, it struck me that there could be no necessity for a construction of one foot, one foot and a half, two, and even three feet calibre to conduct this water, with its accompaniments, from the house into the common channel, or main street sewer; it having merely acquired the addition of soil." The rule deducible from these remarks, by which the size of house drains may be calculated, is simple. "To the calibre necessary to carry off the water laid on, add that required for the reception of the rain or surface water—this latter may be readily calculated from the indications of the rain-gauge of the locality;" or from the quantity assumed to be derived from a roof of a given surface, as we have before noticed. For moderate-sized houses, say of eight rooms, and holding some five or six persons on an average, a tube of five inches in diameter will suffice for the house drain. A six-inch pipe laid with a sufficient fall will be ample, if properly treated, for the most capacious private house. Having, then, ascertained the size, the next step will be to decide on its form and material. With reference to the shape or form of the drain, it is now universally admitted that the circular, or, if comparatively large, the elliptical or oviform, is decidedly the best. As to the material, the two points to be obtained in such are, "impermeability, and smoothness of internal surface." These, it is evident, cannot be easily obtained, if at all, by the use of bricks or other similar material. The earthenware tubes, now so largely used, offer the required advantages: they are tolerably cheap, easily laid down, and, by being glazed in the interior, as some kinds are, little or no resistance is offered to the passing fluid; they are, moreover, kept clean for a considerable time, the soil refusing to adhere to the polished interior. The depth at which the drains are to be laid is the next important matter to be considered. There are various opinions on this point: the construction of many houses, having deep basement stories, necessitates, in the opinion of some, the laying of the drains at a considerable depth beneath the surface of the ground. The more thoroughly the principle of having the drains at or near the surface of the ground is carried out, the more efficient and certain will be the operation of the drains. It will certainly be objected to this plan, that many, if not all, basement buildings must remain undrained; but even in such cases "it will be still equally imperative that all the sewage water shall be delivered into the drain at or near the ground level. No sink or other apparatus for discharging refuse water should be retained in the basement, and the extra labour of carrying this water up to the surface level, or head of the drainage, must be incurred as the penalty of this misconstruction or misappropriation of the building."

In laying down drains, the arrangement first to be looked to after the size and depth are arranged, is the collecting of the drainage matter to one point. Thus the products of the water-closet and sink should be led at once to a trapped contrivance by which it will be readily admitted to the drain leading to the sewer, yet all gaseous matter therefrom prevented from ascending through it to the house, or surrounding atmosphere. This is an essential point which ought not to be overlooked. The contrivances for attaining this are so numerous, cheap, and effective, that there is and ought to be no excuse made for neglecting it. As the Commissioners of Sewers in the metropolis consider the joining of the house drain with the main sewer a matter of such importance that they make it imperative upon house owners to hand over this part of the construction of drains to their own officers; it is needless for us here to enter into a detail of the methods adopted. In laying drains it must be recollected that all angular and sudden bends must be avoided: these are very prejudicial to the speedy carrying off of the products. When curves are essentially requisite they ought to be of the largest possible radius. All joints ought to be carefully luted, so as to render the whole length of the drain perfectly impermeable.

In connecting water-closets with drains, the point of discharge from the same should be as close as possible to the main sewer into which the drain empties itself: the matter from the closet being certain to be more solid than liquid—the sewage water will have more demoving force at a point further away from the place where it enters the drain than near to it. The farther, then, the water-closet is from the place where the greater portion of the sewage water enters the drain, the more certain will the removal of the solid matter be. The water from the kitchen-sink, and from the fixed wash-hand basins (if any) in the bed and dressing rooms, should, if possible, be admitted to the trap basin of the water-closet: these will act efficiently in removing the solid matter therefrom. Cesspools, those defective contrivances before alluded to, should never be made in new buildings. In cases where they unfortunately are in use, more especially where a privy is attached to them, the entrances should be carefully trapped so that the offensive odour can have no means of access to the house. A drain should be led from a part of the cesspool, at a certain height, to the drain leading to the sewer, so that the superabundant material in the cesspool will at once be drawn away, and the matter therein consequently kept at the same level. A trap basin should always be adapted to a cesspool privy—the syphon form is cheap and effective. The refuse water from domestic purposes may be thrown into this, which will aid in carrying off the solid matter. The wisest plan, however, is to fill up or build carefully over, all cesspools wherever situated, substituting for them efficient well-drained water-closets. An important desideratum in effective drainage is a ready means of access to the drains, by which they may be examined and cleaned when necessary. If the tubes are placed in any thing like straight lines, this operation will be much facilitated. Moveable covers, placed at the angles or turnings, through which a simple apparatus might be inserted for removing matter from the interior of the drains, have been suggested. The plan seems good, but would it not be a matter of difficulty in getting the parties performing the duty to replace carefully these covers? If so, the cure would be infinitely worse than the disease. If the drains are properly proportioned, according to the matter they have to convey, and composed of proper materials smooth in the inside, we apprehend there will be little necessity for mechanically cleansing them.

So much has of late been written about the importance of *ventilation*, that all remarks appear trite and common place. They are nevertheless disregarded. All are agreed as to the necessity of having a good supply of air in the interior of our houses; nevertheless, people are by no means unanimous in their endeavour to attain such by the adoption of constructive contrivances or arrangements connected therewith.

The most simple and efficient mode of ventilating is by taking advantage of the natural currents which are created and maintained by the movements of heated air. Air when used for the purposes of respiration, after being expelled from the lungs, is raised in temperature to such a degree, that it rises immediately upwards. Some practitioners advocate the mode of ventilating by withdrawing the used air by the bottom of the apartment, as, say they, the carbonic acid gas, composing by far the largest portion of respired air, being a heavier gas than common air, must perforce descend to the ground. This goes directly counter to the facts so clearly elucidated by Dalton, in his theory of the diffusion of gases. From his experiments, which were thoroughly conclusive, and which have been corroborated by those of others, more especially by Professor Graham, the fact was clearly established, that "all gases tend to diffuse themselves through each other even when no chemical combination ensues." Light gases and heavy gases mix freely with one another in *opposition* to their natural gravities. "Light gases even descend, and heavy gases ascend." Dalton accounted for this phenomenon by assuming that gases diffuse themselves through each other in the same way as they would pass into a vacuum. Thus, "in consequence of this power of diffusion, no gases can ever remain for any length of time at the surface of the earth, however heavy. The poisonous carbonic acid evolved by respiration, combustion, and numerous other natural operations, steals insensibly into the superincumbent air, and has been detected at the greatest altitude which man has hitherto attained."

We are by no means disposed to look upon ventilation as a matter of difficult attainment: we consider that the laws which regulate the movements of air are simple, and can as simply be made available for practical purposes. To maintain a healthy ventilation of the lungs in the open air is easy enough: the nearer we can make our houses approach to the condition of the external air, the more perfect will they be with reference to their health-maintaining powers. In carrying out simple plans to attain this, various modifications must necessarily be introduced to be made subservient to our ideas of comfort, whether these ideas are or are not consistent with reason and sound scientific views. Thus, it is an easy matter to give to any room an unlimited supply of fresh air, but unfortunately it is not such an easy matter to warm that air so as to make it comfortable in its effect, and to deprive it of that power which it undoubtedly has when injudiciously admitted, of inducing colds and other complaints. Still, we hold, it would be a libel on the mechanical genius of the day, to say that simple, effective, and cheap means of heating air cannot be introduced. Thus, there is much heat actually lost—thrown up the chimney, or communicated uselessly to surrounding materials in every fireplace,—which could be simply and cheaply used for affording heat to a simple contrivance placed opposite the fresh air aperture. It may be said that more fuel would thus be consumed: little or none; but if it were the case, it is all got back again, and with double effect—it serves to warm effectually the air of the room, and what is coal consumed for if not for this? A small supply of hot water will be sufficient to heat the admitted air used for ventilation, by the application of a simple contrivance to the fires used in a house, by which most of the heat now lost would be made available for the very purpose for which coal is consumed. The water thus obtained could be led to places where requisite, and made useful as a heating power by being placed in a series of small pipes, or a "heating box." There would be no trouble attendant on the plan: once set in operation, it might continue for months untended. We do not despair of seeing gas applied to effective heating apparatus: it is admirably adapted for dwelling-houses. In making apertures for the admission of fresh air, the builder need not be apprehensive of making them too large or too numerous—the more area he can get the better. In the open air, although surrounded by an ocean of air, we do not take more than our lungs require; and so in like manner in our houses, if the supply be ample, more than in fact is required, it will do no harm—the supply of air through the apertures will, in truth, depend upon the demand for it in the interior.

For withdrawing the foul air, various plans have been put in requisition: the chimney is a good ventilator, but its powers of usefulness are restricted by the facility with which smoke is driven down the apertures. Many contrivances are made to obviate this, but they are not altogether faultless, and should be looked upon at the best as mere make-shifts, or substitutes for better plans. Flues may be conducted up the interior of the walls, made with smooth circular tubes, having their upper apertures beneath the cornice or eaves, and the lower one at the cornice in the apartment to be ventilated. The most efficient plan would be the carrying up of independent flues alongside of the chimney-flue, the heat of which would increase the temperature of the vitiated air in the ventilating flue, and consequently its ascending force. Such an independent flue would act in most seasons, but in winter, from the chimney-flue being heated by the products of the fire, the power would be greater, and it would act with more certainty. At the aperture in the room, communicating with the interior of the ventilating flue, a gas jet might be lit in summer time which would act efficiently as an exhausting power. The

plan of having separate ventilating flues, recently registered by Mr. Walker, of Manchester, seems likely to be useful. It consists of a series of oblong tubes, rounded in the corners, placed side by side in stacks of any number required. These tubes are of different sizes; the large ones acting as chimney-flues for the fire-places; the small ones as ventilating tubes. From the side of the chimney-flue forming that of the ventilating tube, the air contained within the latter is rarified, and its ascending power increased. The plan is simple: from the arrangement of the tubes, little or no extra space is required in the placing of a stack of chimneys.

VENTILATION OF HOSPITALS AND OTHER BUILDINGS.

THE conditions prescribed for Dr. Arnott with respect to the ventilation of the York County Hospital, now in progress, were the forcing of a sufficient quantity of air into the building every minute, and the means of measuring that quantity exactly: 2,000 cubic feet a minute was the amount determined on, and it was desired that the apparatus should be as nearly self-acting as possible.

To meet these requirements a pump has been constructed, consisting of a weigh-beam, with a gasometer (a bell-shaped metal vessel) working in a trough of water at one end, and a counterpoise at the other. The gasometer is about 6 feet diameter, and holds 125 cubic feet of air. Every time the gasometer descends or ascends, its contents are discharged into air-drains leading to the building, and this being made to occur sixteen times in a minute, the requisite 2,000 feet of air are delivered.

To give motion to the machine, the well-known property in fluids of transmitting pressure equally in all directions was had recourse to. An inch pipe from a cistern of water 60 feet above the apparatus gives a pressure of 30 lbs. on the square inch, and this acting on a syringe 12 inches long, with a piston 2 inches in diameter, is sufficient to force up the gasometer, which, being heavier than the counterpoise, again descends by its own weight: of course, if the column of water were 120 feet long, half the quantity of water would do the same work. By the arrangement we are describing, the quantity of water used per day is 1,440 gallons, which at the Manchester rate would cost 4½d. per day, if wasted; but inasmuch as it is uninjured and unsoiled, it may be used for domestic purposes, and so would cost nothing. To prevent the pipes from being burst by the shutting off of the column of water, an air-vessel is provided near the syringe; but into this and the other ingenious arrangements by which the general idea we have indicated is carried out, we need not now enter.

Should any very young reader have heard here for the first time of this property in fluids of transmitting pressure equally in all directions, the hydrostatic paradox, as it has been termed, and which produced the hydraulic press, they cannot do better than apply themselves to "The Elements of Physics," written by the constructor of this pump, and they will find their eyes opened by it and their understanding enlarged.

THE BRITISH MUSEUM.

AGITATION has gained for the public an immunity from the meditated inclosure of this pile. Large as is the structure, already the custodes complain of want of room for the glorious remnants of antiquity now deposited in the court-yard of Montague House, and of space for the arrangement of what had been formerly huddled together on the shelves of the old red brick edifice. Any ordinary exhibitor could find in the spacious halls (not half filled) of the new Museum room for double the collection, and the caterers for the great coming National Exposition could easily find space in the empty expanse for numerous galleries to deposit and array double the number of glass cases which now only half furnish the area of the various compartments. Without disturbing the domiciles already completed, an expedient drawn from the Great Exhibition of 1851, might afford ample space for the reliques from Nineveh—the sphynxes, lions, obelisks, and even for the sculpture now scattered along dark galleries, or barred off from observation in "souterains" at a temperature below zero!

The great internal court-yard if covered in with a glass dome would give room for the whole contents of the national collection: an ample causeway might be reserved all round, and at the angles four areas as large as most structures possess in cities.*

With four entrances from the centres of the square, it would be accessible on all sides, and being covered in with *pellucid* glass this colossal hall, whatever its height, could obstruct no light from the windows of the present structure. Ornamentation to any extent might be introduced in stained glass—but simplicity, as in the details of the Exposition, is the truer nobility.

From a miniature example (the rotunda in the Colosseum) the advantages of a circular and well-lighted hall may be inferred; and whilst such a structure may be easily heated to a genial temperature, there is no danger from fire, as the material is at the same time incombustible and almost imperishable.

Ventilation in summer can be as easily assured as warmth in winter; and here while on the subject of the Exhibition, it is impossible to omit the expression of a hope that this structure may be permanent. Such a winter garden, enclosing eighteen acres, filled with all the shrubs and flowers that are indigenous to the Temperate Zones, heated to an equable degree, and cultivated as the gardeners of the Horticultural Society, Regent's Park, know well to effect, would be a solace, a benefit, and a luxury to the inhabitants of London.

But again to the Museum—if the wings devoted to private domiciles are not gutted and converted at a vast expense to the purpose of locating marbles and blocks, there is no alternative except to erect another massive building on a new site, and therein to encase the remains, which could never be introduced after the portals were set up. Next to space, light for sculpture is the first consideration—and these obtained, it is of little consequence where the custodes and servitors dwell. — QUONDAM.

ARCHITECTURAL PUFFING, AND "ECCLESIOLOGICAL" BITTERNESS.

SIR,—With a natural curiosity to know what is said and done on all sides, in matters of "Ecclesiology," I usually see the *Ecclesiologist*, a periodical which, if conducted in a less partial and more generous spirit, might exercise great influence, and be looked upon as an authority in such matters. That this is not the case, as now conducted, I unhesitatingly affirm. I have often been struck with the blind and almost nauseous praise of two favoured architects, whose works are almost invariably held up to admiration; the whims and eccentricities of one being deemed "deserving of study and imitation;" the common-place productions of the other, with his servile devotion to all the extreme views and "dicta" of particular parties, being thought "excellently proportioned," or "rivalling ancient examples." In the last number of the *Ecclesiologist* I was particularly struck with this favouritism, though it is by no means uncommon, whilst the works of almost every architect mentioned are condemned, as not falling within the extreme views of "ritual arrangement" entertained by the critics of this work, or as not according with their distinctions of date and style. There is a view given of a common-place inharmonious design for a cathedral building at Perth, and two views in connection with a very simple and easy restoration. The only other views of modern churches which have ever been given in the *Ecclesiologist* were by the same architects as these. This year they give a lithograph of the new Church of Saint Mary Magdalene, building in Munster-square by one of their friends, who, in their own words, "has enriched the present number with a view of the proposed building," and of which I can only say, I seek in vain to discover any great merit or originality—a church which is not to be named in the same day with many other modern churches, building by less favoured architects. The other illustration is of "a proposed church to be built at Stoke Newington" by their other *protégé*. This affected and unpleasing composition has, however, received such a dressing in a letter from Mr. E. A. Freeman (published in the October number of the *Ecclesiologist*), that I am content merely to ask your readers to refer to this letter: they will, no doubt, agree with Mr. Freeman and myself that "its entire want of architectural merit is rendered more conspicuous by its pretence and its affectation of singularity." In Mr. Freeman's letter he complains boldly and truly of the barefaced partiality shown to this gentleman. The *Ecclesiologist* is so completely to these two practitioners what the "Poet of the Million" is to Messrs. Moses and Son, that I recommend these architects to have the complimentary passages of each number reprinted in a small form and mediæval type, and thrown into the windows of cabs and omnibuses as they leave the railway stations: it would probably add to their employment, as there is no doubt this ingenious method of puffing does to that of its authors, Messrs. Moses.

At the meetings of the committee of the Ecclesiological Society the designs of these gentlemen form the standing dishes—the *vrai pièce de résistance*. No wonder that the ideas of these gentlemen, having been subjected to the criticisms and mutilations of the committee (and no doubt received by their authors with all faith and meekness), are puffed and praised by the critics of this work, frequently members of this very committee, and deemed as supremely correct and ecclesiastical, "deserving very high commendation" and receiving their "warm approbation." It would be fairer in these writers to remember that their views and "dicta" are not laws; that they are strongly disputed, and even dreaded by a large portion of the church and laity. There should, at least, be some consideration for the works of other architects not employed by persons holding these extreme views; but no allowance is made for the difficulties they may have had to contend with; frequently of limited and insufficient funds; of prejudices or selfishness on the part of squires or churchwardens; of dread on the part of the clergymen that certain arrangements or decorations in their churches may identify them with Tractarianism; and though last, not least, of the views and decisions of the bishop in whose diocese they build, and who happily, perhaps, for the purity of our religion, are often not inclined to *ape* the "form and tinsel" of Romish worship.

If the main purpose of the *Ecclesiologist* be now, unluckily, to puff a couple of friends, at all events the writers need not endeavour to pain or injure others, showing often not less malignity than ignorance, and entire want of feeling for art. I send you my name, and you will know that I am AN ARCHITECT.

PATENT LAWS AND POOR INVENTORS.

THE despondent murmurs of the "poor inventors" have been pretty loudly reverberated, and it is to be earnestly hoped that the doom of our vile and plundering patent laws will be shortly sealed. Amongst various other writers on the subject recently, a correspondent of the *Morning Herald* says:—"The intended industrial exhibition of 1851 has naturally directed attention to the defective state of the law for the protection of designs and inventions, and on the principle that the first sufferers are the first to cry out when the shoe pinches, inventors who are unwilling or unable to procure letters patent for their inventions, are sadly complaining that there is no efficient protection provided for them by the Provisional Registration of Designs Act. . . . . Society reaps the great benefit—*ergo*, society has the strongest interest that inventions and improvements should be published; but society can hardly expect inventors to publish, unless inventors can retain the property of their inventions after publication, at least, for a much longer period than one year. I have already suggested a remedy for this evil; viz., to grant letters patent without stamp-tax or official fees, but as complete justice seems hopeless, I would suggest the following compromise between our right to have our scientific property protected without extra charge, and the practice of selling justice (very dear), which has prevailed hitherto:—That a patent right for three years be granted (on applica-

* See Professor Hosking's Design, p. 295, *ante*.

tion, accompanied with an outline of the specification) without stamp, tax, or fees—the patentee to have the liberty to make and sell the thing patented—after which period of time he shall be subjected to a charge of 5*l.* per annum for the remaining term of the patent: neglecting to pay the annual tax, to incur the forfeiture of the patent right."

In considering the advantages to be reaped from such a remedy, the writer remarks:—"As the patentee can at any time determine the patent by ceasing the annual payment, inventions which are not worth working would not long continue to be obstacles to the progress of improvement. This is a great evil at present, and its magnitude would be increased if patents could be obtained without cost, unless my proposal be adopted to compel patentees under some circumstances to grant licenses, so as to prevent patentees from using their patent rights in a manner to become a public nuisance."

Another writer suggests that though to many a medal may be preferred to a money premium at the International Exhibition, the more substantial reward of a cheap patent, as in other countries, would be infinitely preferred by the mass of poor inventors. "To those whose business it is to design articles of mere luxury and fashion, the provisional registration may be of some use, but, as if in mockery of the more useful power of invention, those who cultivate the steam-engine, the locomotive, the loom, the telegraph, or any other important branch of national industry, are left without the slightest encouragement or protection. No doubt there will be many capitalists and manufacturers ready to catch all new ideas appearing at this exhibition, and mere operative skill will be recognised: but what encouragement is there for the intellect—the power of adapting new principles, or of making new modifications of old ones? To the mechanics of this country I would say—urge on every occasion the necessity of removing this prohibitory tax upon your intelligence, more especially since every recent act of the legislature tends to encourage and promote trade competition, and hence reduces, in the aggregate, the value of labour. Ask to be placed on the same footing as your fellow-workmen in other countries, with whom you will be compelled to compete—ask for the privilege of being able to help to raise yourselves—in fact, for a fair field and no favour,—and rely upon it this enormous and unjust imposition will soon be reckoned amongst the barbarous taxes of a bye-gone age."

Mr. Dickens, an old enemy to "Patent-eaters," gives, in his *Household Words*, by a poor inventor, what would be an amusing were it not a melancholy and disgusting detail of bandyings to and fro between the Home-office, the Attorney-general's chambers, Patent-office, Privy Seal-office, Home-office again, Signet-office, Clerk of Patents, Chancellor's Purse-bearer, Clerk of Hanaper, deputy Clerk of Hanaper, Lord Chancellor again, and so on, paying every one as he goes, and, "note, nobody all through ever thankful for their money, but all uncivil," till at length when his grain is well thrashed out of all the chaff, with six weeks' work and lodgings to pay, he is let off at last by "fees to deputy chaff-wax," making up the odds of 96*l.* 7*s.* 8*d.* for a patent for England alone, which yet remains to be run up to more than 300*l.* should it be desirable or possible to extend it to Scotland and Ireland. This plundering fee law is an infinite disgrace to the nation. Now is the time, however, for a long and strong pull all together against it, till the whole superstructure tumble to pieces about the ears of the chaff, and the deputy chaff, and all the other official absurdities heaped up as mere gross pretences for the legal plunder of the "brains of poor inventors."

YORKSHIRE ARCHITECTURAL SOCIETY.—On Thursday, last week, a meeting of this society was held, when the Venerable Archdeacon Creyke was called to the chair. The accounts for the past year were submitted by the Rev. R. E. Batty, treasurer, and a balance of upwards of 200*l.* was declared to remain in hand to the next account. A grant of 15*l.* for the restoration of St. John's Church, York, was made.

RAILWAY JOTTINGS.

THE number of passengers on the railways last year (says a correspondent of the *Morning Herald*) exceeded double the population of the United Kingdom, those travelling by third classes alone exceeding the whole of the population—young, old, rich, and poor. As, however, it can scarcely be supposed that more than one quarter of the people have availed themselves of the advantages of railway transit, it will follow that each passenger, on the average has gone eight trips in the year—a journey to any place and back with return tickets being considered generally as only one journey. The capital already raised by railway companies (says the same writer) exceeds one quarter of the national debt of Great Britain and Ireland, and would be sufficient to purchase the whole of the property in Ireland rated to the poor at twenty years' purchase on the poor-law valuation.——The aggregate amount of traffic on railways in the United Kingdom during the current year shows a very considerable increase over the corresponding period of 1849. The published total receipts from 1st January to 29th September, 1850, amounted to 9,525,707*l.*; corresponding period of 1849 to 8,275,679*l.*; showing an increase of 1,250,028*l.* for that period. The receipts during the first quarter of 1850 amounted to 2,613,237; second quarter to 3,214,903*l.*; and third quarter to 3,697,567*l.*; being an increase over the corresponding periods in 1849 of 283,001*l.* in the first quarter; 422,301*l.* in the second; and 544,726*l.* in the third quarter.——On the London and North-Western the traffic for last week exceeded that for the corresponding period of 1849 by no less than 8,108*l.* The increase in the passenger traffic has been 3,143*l.*, and in the goods traffic 4,837*l.* The increase for the fourteen weeks since the commencement of the present year has been 50,410*l.*—that is, at the rate of 3,600*l.* per week, or 187,200*l.* per annum.——Owing to the reductions of fares between Mansfield and Nottingham, more than 1,000 passengers, treble the usual number, passed between the two towns last week.——Nearly 20,000 persons have visited Southampton, Portsmouth, and Salisbury, by the cheap excursion trains during the last two months.——Parties were taken by a great excursion train lately from London to Edinburgh, Glasgow, and back, upwards of 800 miles, for 17*s.* 6*d.*——An experimental reduction of first and second class fares and day-tickets has been made to and from all stations on the Syston and Peterborough branch of the Midland.——The Railway Commissioners have remitted the tax on excursion trains where they carry passengers at less than a penny a mile.——During a recent excursion from Gloucester to London, with about eight hours allowed in the metropolis, it was found possible to travel from Ross to Brighton and back in 24 hours; allowing one hour and a half in Brighton, and three hours in London, and travelling a distance of 350 miles.——Herapath, speaking of railway prospects, says, "The conclusions we come to are these, that railways were made too fast for resources of the country, when the trade was so much depressed, and hence the continual sinking of the mileage traffic. The course, however, is now turned, and railroads are beginning to feel the elasticity of the trade of the country. Though above one-fifth of new miles of railway have been opened during the present year more than existed in the past, the traffic per mile has diminished scarcely perceptibly, or at the rate of 54*l.* per mile only. In other words, though the length of lines opened has been increased nearly 21 per cent. so great has been the increase of trade, that the mileage traffic has diminished only about 3 per cent. If, therefore, we can get the capitals closed, and keep men a little honest, there is very little doubt that railways will eventually be good paying properties at par, much less at the prices at which most of them now are. The present pay, we admit, is bad, and has been brought about as much by shareholders' madness in 1845 as by directors' in 1846, by shareholders' carelessness as by directors' extravagance. Even at this day, notwithstanding the woful experience they have had, shareholders at meeting are little better than a flock of sheep."——The Great Northern are about to erect a large locomotive depot at Peterborough, similar to those at Wolverton and Swindon. There will be between 1,000 and 2,000 persons employed.——The South Devon Railway Company lost 364,000*l.* by the atmospheric bubble.——The cost of the high level bridge at Newcastle, as far as we can learn, is the following:—Bridge and works, 360,000*l.*; approaches, 100,000*l.*; property, 120,000*l.*; total, 580,000*l.*——On the Drumlanrig contract of the Nithsdale Railway the viaducts of Carron and Enterkin were completed last week. In honour of this event, the men dined together on Tuesday week, in the Freemasons' Hall, Thornhill.——The Treasury have advanced 130,000*l.* to carry on the Waterford and Limerick Company's works during the winter, and the number of workmen, now amounting to 300, will be greatly increased.——After four years' labour the great tunnel through Mount Carioso, on the Leghorn and Florence Railway, has been completed.——The Austrian Ministry of Trade and Public Works have offered a prize of 20,000 imperial ducats for a locomotive, the most suitably constructed and adapted to convey goods and passengers on the railway of the Semmering Mountains, and 10,000, 9,000, 8,000, 7,000, and 6,000 imperial ducats for the five next best.——The Britannia Tubular Bridge is now complete in all primary respects. The down line through it was opened on Monday, after the tubes were tested with 280 tons of coal in twenty-eight waggons, besides two locomotives. The deflections were only three-quarters of an inch. The train was then taken about a mile distant, and shot through at the utmost possible speed, and the deflection was found to be sensibly less in the way of undulation than when the load was before in the tube. The deflections are nicely observed by means of a water-gauge. Messrs. E. and L. Clark state that the heaviest gales through the Straits do not produce so much motion over the extent of either tube as pressure against the side of the tubes by ten men; and that the pressure of ten men keeping time with the vibrations produces an ocillation of 1¼ inch, the tube itself making 67 double vibrations per minute. The strongest gusts of wind that have swept up the Channel during the late stormy weather, do not cause a vibration of more than one quarter of an inch. When the two tubes are braced together by frames, which is now being done, even these motions, it is expected, will cease. The action of the sun at midday moves them a quarter or three-eighths of an inch. The daily expansion and contraction of the tubes varies from half an inch to three inches, attaining the maximum or minimum at about three o'clock a.m. and p.m. If a compass be held over any part of the bottom of the cells, the south pole is affected, and if over the top, the north is affected; and this is observable in all parts of the tube, and although their position is only about 10 degrees west of the magnetic meridian.——The Earl of Bantry, it is said, has offered to bestow on any one who will construct a railway from Bantry to Berehaven a free gift of all the land on his estates required for the enterprise.

FAILURE OF IRON RAILWAY BRIDGE, TOOLEY-STREET SOUTHWARK.

AN iron girder bridge at the South-Eastern Terminus, London-bridge, gave way on Saturday last, under a quantity of bricks that had been piled on it. The following particulars are given in the *Times*:—"It appears that about two or three years since one of Warren's patent iron span arches was thrown over Joiner-street, Tooley-street, Southwark, in order to afford accommodation to the increasing number of persons travelling by the railway. The span, which was about 60 feet wide, was supported by a number of iron chains, similar to those in use at the suspension-bridges. From the time the structure was completed up to Saturday last not the least deflection was perceptible in any part, but during the past week or so, in order to afford space for stacking the bricks used for building the arcade leading to the entrance of the station, some tons of brick-work have been placed on the roof of the arch. This seems to have been a greater dead weight than the arch was intended to bear, for all of a sudden, on Saturday morning, a report similar to the discharge of a cannon occurred. It was soon ascertained that the immense weight of bricks on the arch

had caused some of the cross-stays to split asunder, and for some time the entire demolition of the whole was expected. A number of men were quickly set to work, and having placed shoring poles under the arch, the dead weight was taken from the top; but so dangerous was the arch considered that it was found necessary to stop up the thoroughfare, and neither passengers on foot nor in vehicles have since been allowed to pass through the street." Mr. Barlow, the company's engineer reports that there were 120 tons of bricks on one girder alone.

Surely Mr. Barlow must be in error, or has been mistaken by the printers. We have received five communications on the subject. According to one of them there were not more than 8,000 bricks on the arch. A second says, "the girders are about 11 feet apart, and the one that broke about 41 feet 6 inches long to its bearings; so you may form an idea if it was possible the girder could have been so loaded with bricks as he states, when, in fact, they did not extend on to the bridge more than ten feet. I question if Mr. Barlow would like to test the remaining girders with half the 120 tons he speaks so confidently of, added to the present formation: he surely must mean *cwts.* and not *tons*, which would, in my opinion, be nearer the proof."

We shall probably know something more about it before our next publication. If the roofs and bridges here are being cut as fine as the roof at the Bricklayers-arms station by the same company, to which we drew attention a few weeks ago, we shall have more failures before long, or theory is all at fault.

THE PRIORY CHURCH OF ST. PETER, AT DUNSTABLE.*

THE general plan of the present Priory Church of St. Peter, Dunstable, is comprised in a nave, two aisles, with a tower at the north-west corner. The nave is composed of seven bays, separated by piers, and niches, in two stages. The piers are of the ordinary character of the Anglo-Norman style; and consist of a series of cylindrical shafts, recessed, and semi-detached alternately, with cushion and carved capitals, and square abaci. The shafts on the internal sides above their capitals, have moulded arches, springing from them with hood mouldings, cut with a chevron ornament. Above these arches which open into the aisles, is a billet moulded string, formerly continuous, but now partially cut away. The centre shafts and the two quarter shafts on the faces of the piers detach themselves from the rest, and are carried up to the level of the springing of the heads of the clerestory windows: the two quarter shafts finish with capitals of carved foliage and square abaci, and have segmental arches moulded, turned from pier to pier, enclosing the clerestory windows. The central shaft, which continues up higher, is surmounted by a stone corbel and wooden angel, supporting the present tiebeams of principals. The roof of the nave is of oak, with the ends of the principals and tiebeams supported by carved figures standing upon a bird, resting upon stone corbels of late character attached to the central shaft. The principals correspond with the number of piers, and rest upon tiebeams. Each compartment between the principals is subdivided by an intermediate principal, and framed purlins, into twelve smaller compartments or panels, all of them deeply moulded, having enriched bosses of knots of flowers at the intersection of the timbers, and horizontal angels at the feet of the intermediate principals. The exterior of the western front offers a singular combination of three styles, Norman, Early English, and Perpendicular. The principal entrance to the church is through the Anglo-Norman doorway. The depth of the jamb is considerably increased by two piers on each side, on which are sculptured bas-reliefs, now almost obliterated. Four cylindric shafts recessed, crowned by carved capitals with square abaci, form the jambs. The capitals vary: one represents David playing on the harp;—another a bishop, with mitre and crozier;—a third, two men with birds holding a scroll. Enriched arch mouldings spring from the capitals of the shafts.

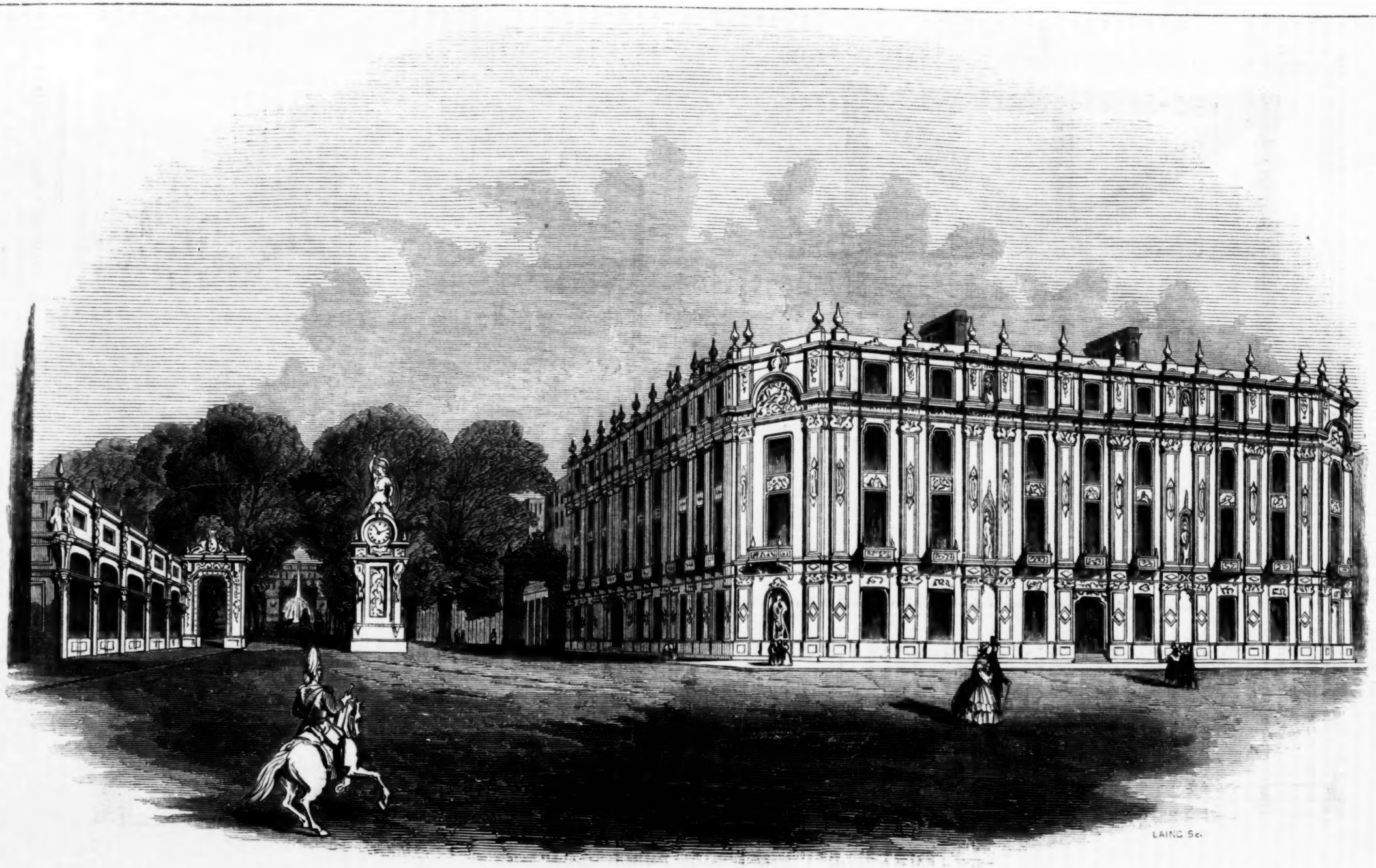
* From a paper read by Mr. G. S. Clarke at a meeting of the Bedfordshire Architectural Society, reported more at length in the *Bedford Times*.

The precise date of the foundation of the church is somewhat obscure. Prior Richard de Morins commences the chronicle of Dunstaple by the following:—A.D. 1135, King Henry 1st died in the 35th year of his reign, in France, but was buried at Reading. He founded the Abbey and Monastery there and at Cirencester, and the Priory of Prato apud Rothomagum, and the Priory of Dunstaple. One of the witnesses to the charter was Robert Blois, Bishop of Hereford, and he was not bishop till 1131; so that it may fairly be presumed that between 1131 and 1135 (the year of the death of the king) the Priory of St. Peter, for a Prior and 12 Austin or Black Canons, was founded at Dunstaple. The register at Lincoln, quoted by Dunstable and Bishop Tanner, gives Thomas as the first prior, elected in 1196, and who died in 1202; but either the register must be defective, or the priory must have been without a head for 37 years, which is highly improbable. According to the chronicle, the almonry was erected in 1208; and in 1213 (the same year the town was burnt by accident) "Hugh, bishop of Lincoln, dedicated the church in the presence of knights, barons, abbots, priors, and many nobles, but not many of the common people." The dedication followed the completion of the entire edifice, and the latter must consequently have taken no less a period than 77 years to erect. This appears very long, but at the same time it will assist somewhat in unravelling the web of mystery that has hung over the west front of this church from time immemorial. Starting with Mr. Bentham's theory, and being assured from the statements in the chronicle before quoted that the church was cruciform in plan,—presuming that choir, presbytery, and transepts were of pure Anglo-Norman (the prevailing architecture at the time of the foundation and for 40 years after),—observing by reference to the church that the same style is to be found throughout the entire nave, including the great western door, and the three groined arches of the south aisle, to a certain level, which level is determined at the billet-moulded string above the nave arches, the following inferences are drawn:—First, that the monks, under the royal patronage, made a prodigious start at the outset, laid down the entire plan, and commenced the whole of the entire fabric from extreme east to extreme west; carrying up the work to the before-mentioned billet-moulded string below the present clerestory. Secondly, that the great scale of the work, and perhaps the troubles of Stephen and Henry the Second's reigns affecting their exchequers, they ceased labouring at the nave aisles, and concentrated their strength and resources upon the eastern portions, and completed them for the purposes of worship; then gradually advancing westward, they finished the two first bays of the nave to their present height. Thirdly, that these works occupied a considerable period of time, during which a change from Norman to Early Pointed, generally termed Transitional, had begun to display itself throughout England. Fourthly, that this change can be detected in all the succeeding bays of the nave; in the delicacy of the carving and foliage of the capitals, as well as in the character of the arch mouldings themselves, without materially affecting the character and outline of the original design. Fifthly, that this transitional character itself was then superseded by the more correct, because more developed, Early English or Pointed Style; as exhibited in the open gallery and upper portion of the west front, lower stages of the tower, and north-west turret. And lastly, that the whole church was roofed in, and finally completed for dedication, in A.D. 1213, at a time when the Early Pointed Style was in its zenith and greatest purity. Reducing these inferences into a more simple form of dates, they would be determined as follows:—The whole of that part of the church eastward of the nave, now destroyed—including the two first bays of the nave, their entire height, the remaining bays to the level of the billet-moulded string, the existing ground bays of the south aisle, the great western doorway, and interlaced wall panelling—was erected during a period extending from 1135 to 1170, and may be termed Anglo-Norman. The other portions of the billet-moulded string of the other six bays on each side the nave, exclusive of the clerestory lights, which are insertions, between 1170 and 1180. The greater part of the west front, the west side of the present tower to the level of the quatrefoil band on the same, the adjoining turret to the level of the columns at the angles with painted arches over, between 1180 and 1213. The tower itself, the north aisle, a portion of the south aisle, the screens and carved wood work, the roofs of the nave and aisles, the massive piers at the eastern end of the church, all these are undoubtedly specimens of the architecture of the fifteenth century termed Perpendicular.

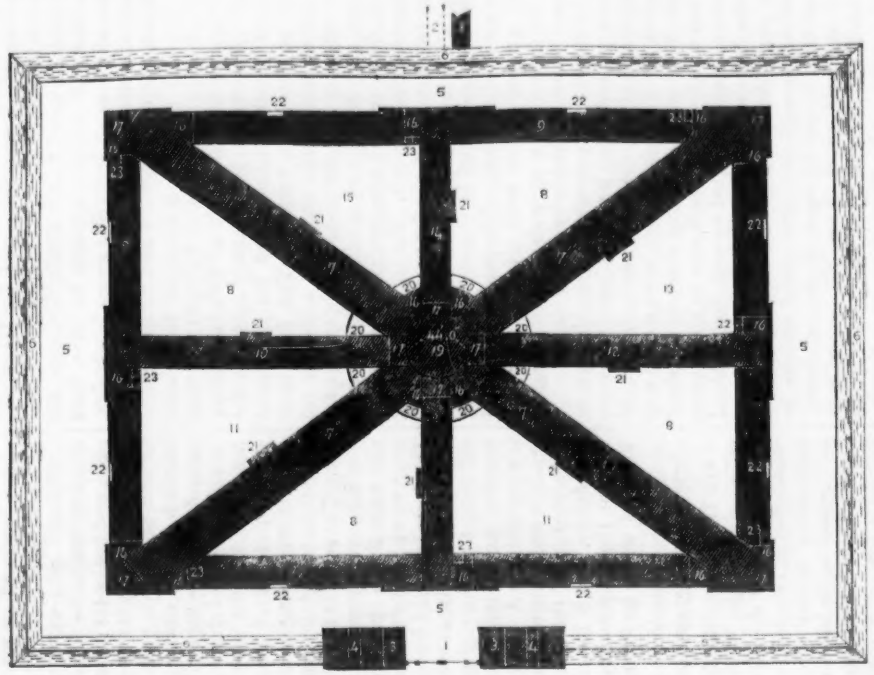
CHURCHES AND CHAPELS.

THE spire of Keysoe Church was struck by lightning lately, and rent to a considerable extent, and a large breach made over the window of the tower.——It is proposed to enlarge the church of St. John Moulsham, Chelmsford, by the projection of transepts, and of a chancel with chancel aisles of corresponding dimensions. The estimated cost of these works, by which 427 additional seats would be obtained, is about 1,300*l.*, of which nearly 300*l.* remain to be raised. An equal outlay would be required for the completion of the entire plan by the erection of a tower, a steeple, and two porches.——The works at Pakenham Church have been completed, and the church is now enlarged by the addition of north and south transepts, the latter built at the expense of Lord Calthorpe. The repairs and enlargement have been under the direction of Mr. S. S. Teulon, architect, and executed by Messrs. Baldiston and Son, of Ipswich, builders, at a cost of 1,600*l.*, the parish providing the carting. ——The restoration of St. Michael's Church, Cambridge, has progressed so far, that the church was re-opened on Friday in last week. The aim of Mr. G. G. Scott, the architect employed by Trinity College and St. Michael's parish, has been, we understand, to restore the fabric, as nearly as could be, to what it was originally. The roof has been rebuilt of oak, with kingposts, &c. It is covered with Colley Weston slates, and surmounted at the east and west ends with crosses of the Decorated style. The piers and foundations of the building have been under-pinned where necessary. The pillars, where mutilated by galleries, pews, and tablets, have been restored, as well as the mullions of the windows, mouldings, string-courses, throughout the church; the walls replastered, and the accumulated paint and whitewash scraped off. Arches resting on massive buttresses have been thrown across the north and south aisles, to support the large chancel arch, the piers of which were considered insecure. The flooring has been excavated, filled in with concrete, and ventilated, the church warmed with hot water, and the churchyard lowered to the basement moulding of the building. The east window has been restored to its original size and glazed with ground glass, while the west has been opened up by the removal of the organ gallery. The tower has been also thrown open, and the whole church has been repewed in carved oak. Many other minor restorations have been, and are still being, effected by Messrs. Quinsee and Attack, the builders. The carving was done by Mr. Rattee.——A new Wesleyan Chapel has been opened at Eaton Socon. It is in the Norman style, and adapted for 300 persons, according to the *Cambridge Chronicle*. Mr. Jubb, of Eaton, builder.——St. Nicholas's Church, Nottingham, has been partially restored and cleaned.——The new church of Llandilo has been opened for divine worship. The cost of rebuilding was above 4,000*l.*, more than one-third of which Lord Dynevor and his family contributed.——Extensive alterations have been made in St. Peter's church, Eldad, Plymouth.——The Wesleyan chapel at Oldham has been enlarged, and fronted in the Doric style, on a plan by Mr. Simpson, of Leeds, architect: sittings increased from 800 to 1,200.

INDUSTRIAL SCHOOL, PLASKET.—We are informed that, in reply to the advertisement for designs, for St. George's Industrial School, proposed to be built at Plasket, Essex, for 350 children, the guardians received on Tuesday last fifty-six sets of designs, with estimates ranging from 4,500*l.* to 27,000*l.*

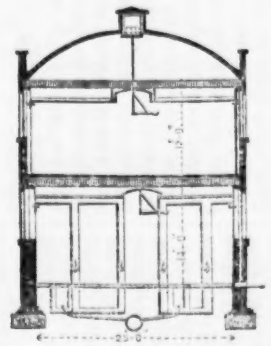


A PROPOSED ENTRANCE TO ST. JAMES'S PARK, AT CHARING CROSS.——Designed by Mr. Alfred Beaumont. [See page 505.



BLOCK PLAN

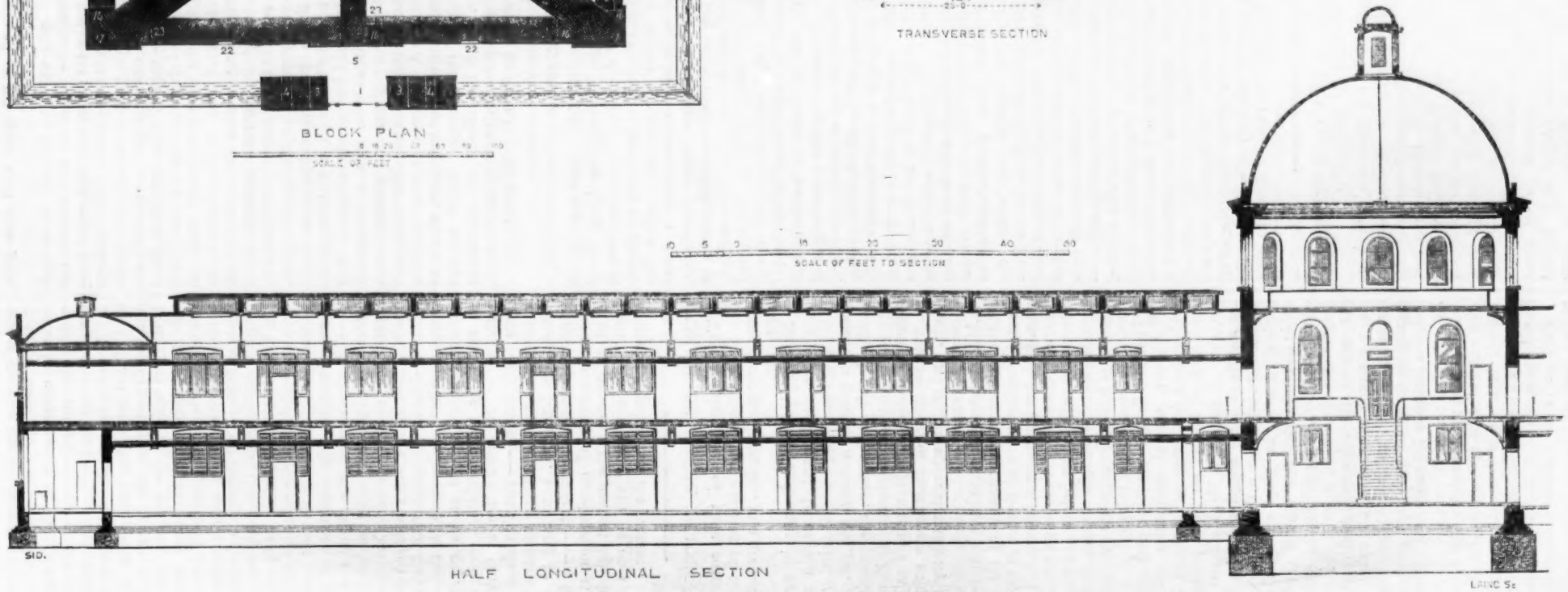
SCALE OF FEET



TRANSVERSE SECTION

REFERENCES.

1 Public entrance.
2 Entrance from market for cattle.
3 3 3 Offices.
4 4 Inspectors' and officers' residences.
5 5 5 5 Roadway round abattoir.
6 6 6 6 Sheds for cattle to stand under.
7 7 7 7 Slaughterhouses for bullocks.
8 8 8 8 Yards for ditto.
9 9 9 9 Lairs under stores open next yard, fitted up with mangers and racks.
10 10 Slaughterhouses for sheep.
11 11 Yards for ditto, with lairs.
12 Slaughterhouse for calves.
13 Yard for ditto, with lairs.
14 Slaughterhouse for pigs.
15 Yard for ditto, with lairs.
16 Sixteen rooms for hides, skins, and offals.
17 Eight lifting-rooms, to raise meat to stores over slaughter-houses.
19 Rotunda, or butchers' exchange, with stairs and gallery leading to stores.
20 Eight places for manure.
21 Eight water tanks.
22 Eight entrance-gates to cattle-yards.
23 Twelve water-closets.



SCALE OF FEET TO SECTION

HALF LONGITUDINAL SECTION

PLAN FOR A FIRE-PROOF PUBLIC ABATTOIR.

DESIGNED BY MR. E. W. GOOCH.

DESIGN FOR A FIRE-PROOF PUBLIC ABATTOIR.

Public attention being turned at this moment to the provision of abattoirs, we are led to give illustrations of a design for a fire-proof abattoir which was submitted by Mr. E. W. Gooch in competition to the Islington Cattle Market Company,* and which, although not selected for reward, appears to have been generally commended. We give a block plan, with references; a transverse and longitudinal section, and the designer's own particulars.

The plan proposed is supposed to be large enough to kill and store all the meat that may be required for the supply of London, taking into consideration the quantity killed in the private slaughter-houses and the dead meat sent up from the country. The four large divisions with yards and lairs adjoining are for bullocks, two divisions for sheep, one for calves, and one for pigs, with a lair in each yard, fitted up with mangers, racks, water and other troughs complete. The lairs to be paved with two courses of tile flat paving in cement, with a fall into yard, and ventilated from the front with perforated iron panel-work built in the window openings. The yards to be paved with granite paving, with a fall for drainage to the centre. The store above the lairage is supported on the inside by iron columns.

In the slaughter-houses either sideways or across, bullocks may be killed, but for private individuals killing their own meat, they would be best fitted up in divisions, with a door into each from yard, allowing a space of about 12 feet 6 inches square each man to kill at cross corners: these are fitted up with double blood tanks, to allow of killing on each side of the posts that form the divisions upon any great emergency, but this would seldom be required. These divisions to be numbered. Hot and cold water to be laid on to each division, and a small crane with proper tackle fixed in each. The meat, when dressed, to be sent by a railway over head to the lifting-room, and taken away from the steam of the slaughter-house, immediately it is finished, to the store above.

There is a small four-wheel carriage connected with a bar in the centre, from which will drop a wrought-iron swivel brace bracket, with hook at end to turn right and left, to take the bullocks from any division from the crane to the railway. The carriage, with the bullock, to be pulled along by a twisted copper rope, so that the meat need not be handled at all; and, by using one of the new patent cranes, that weighs at the same time it lifts, the weight of each bullock, &c. could be ascertained at the same time, and at considerably less trouble. Each end of the slaughter-houses, with one of the hide or skin rooms, can be used for the offal. The blood-tanks to be made with small drain from bottom, and plug and chain similar to a wash-hand basin, to be used for cleaning out the same. Gutta percha stoppers to fit the surface channel, to turn the blood into the tank, to be provided for each tank. The windows to be formed with louvre boards, and the walls throughout rendered with Keene's cement, and trowelled to a smooth surface. Floors are paved with York stone, jointed in cement, with a proper fall to surface drains. The other slaughter-houses, for sheep, calves, and pigs, will require but little fitting-up different to the above description, with the exception of the railway, which will be suspended from the iron girders that support the floor above, and a blood-tank put in every division between the two iron girders, and no posts will be required as to slaughter-houses for bullocks.

The store-houses are carried over all the slaughter-houses and lairs below (with the exception of the lair next the market, which can be carried up if required). The floor is formed of three courses of tiles, bedded in cement, supported on small iron girders, resting on each wall, with small wrought-iron bars running from girder to girder, as shown in sections.

The floors are laid to a proper fall to the various gratings, to carry off the water to drains below. Each store is fitted up with a railway along the centre from end to end, supported from light girders, to convey the meat from any division required, which can be continued round the outside stores. The stores can be divided off from girder to girder, with light iron bars, leaving a 5-feet passage along the centre, enclosed in the front with iron gate, lock and key.

Hot and cold water to be laid on to each division, and to be fitted up with dresser, top rails, and hooks for meat, and such other conveniences as may be required. The windows to be filled in with perforated zinc, with inside louvre boards to shut out frost. The roofs are formed with tile arches, with ventilators filled in with perforated zinc, and shutters to keep out frost, running the whole length of roofs, as shown in sections. Two or three doors to be made in every wing, to allow the butchers to receive their meat into their carts in the yards below. The rotunda is the centre of communication from every wing, with a landing all round; also a small side staircase, leading to an upper gallery, with easy access to any of the roofs. The dome is turned four tiles in thickness. The walls tied in by iron rods, with a suspension rod from the centre of top, and a circular iron frame to receive top of dome. The upper part is a ventilator. A residence is provided for a resident superintendent or inspector, who is to have charge of the abattoir. There are also four offices, and if the officers are required to sleep on the premises it can easily be arranged. The cost would be from 15,000*l.* to 20,000*l.*

* The Islington Cattle Market Company have recently published a "Plan of the Islington Cattle Market with proposed Additions," showing that they can command an area for general purposes of 75 acres if required.

THE INTERNATIONAL EXHIBITION.

On Wednesday, the 23rd, there was a general meeting of the Metropolitan Local Commissioners with the Royal Commissioners at Westminster, to consider how best to supply deficiencies in the returns made, when 150 gentlemen attended, representing a large amount of intelligence and knowledge. Amongst the matters wherein deficiencies at present exist may be mentioned door-springs, japanning, buhl work (what is Clerkenwell about?), iron, maps and charts, and ornamental papers. A large model of the building was exhibited, in which, as we fancy will be the case in execution, the extra height of the transept produces an unsatisfactory effect. ——Opportunities will be afforded for shewing pavements, parquetry works, fountains, ceilings, and other similar objects, in preparation for the Exhibition, as parts of the decorations of the building. The spaces, which may be filled with scagliola, cement, and other wall decorations, will be 14 feet high, with semi-circular heads, and 8 feet wide. Parties wishing to exhibit decorative railings may obtain the necessary information by applying to the Executive Committee.——Amongst the specimens from Ceylon will be a fine collection of Singhalese carvings.——The commissioners will supply steam-power to exhibitors gratuitously.—— The building is being proceeded with rapidly, and offers several points of construction, which shall have our attention in a short time.—— Messrs. Fox and Henderson have published a very large coloured lithograph of the building, the best yet issued. The shop-windows are now filled with views of this structure, of all sorts and sizes; the majority of which, by the way, have evidently been copied from the view we gave.

ENGINEERING AND ARCHITECTURAL WORKS IN IRELAND.

The Sisters of Mercy (Limerick) are about erecting a more extensive building than the present one for the accommodation of orphans. ——The report of Mr. G. W. Hemans, engineer to the Midland Great Western Railway Company, states that the works on the extension line to Galway are progressing rapidly; from 8,000 to 9,000 men have been in constant employment during the summer. The cost of working the line is expected to be about 11,500*l.* A locomotive engine is at present working on the line at Athlone. The large bridges over the river Luck and the estuary at Lough Atalia are in a forward state of progress. The bridge over the river Shannon is also being erected: it consists of eight piers, 10 feet wide; in the centre is a bay 10 feet span, with bays on either side of 43 feet span; two larger bays of 165 feet in width, with segmental lattice-work, are at each side of the latter; and between *these* and the abutments are bays about 43 feet span.——The Drainage Commissioners of the Board of Public Works have for the last twelve months employed 300 or 400 men in erecting an embankment from the town of Youghal to the extensive wooden bridge crossing the Blackwater, in the execution of which work many obstacles had to be overcome in consequence of the volume of water within the embankment and the pressure of the sea from without. The embankment, 2,303 yards in length, encloses a triangular area of 250 acres, the land being at one side, and the causeway to the bridge at the other. It is 6 feet wide at the top, and on the outer side a retaining wall of heavy stonework is erected. After having partially yielded several times, the works are at length secure, and the water will be let off through a floodgate. The original estimate for this work was 8,811*l.* 5s. On the 31st of December last 9,432*l.* 3s. 1d. were expended, and the estimate for its completion was 3,690*l.* Mr. Patrick Larkin, C.E., is superintending the execution of the works. ——The drainage of the Glyde and Doo districts is rapidly progressing under the superintendence of Mr. Robert Manning, C.E.: about 1,000 hands are employed in the district.——The Commissioners of National Education have lately advertised for the erection of a district model school at Galway, according to plans by their architect. —— The front building of the workhouse at Outerard has been lately burnt.——The Poor-Law Commissioners are about building a new workhouse at Croom, co. Limerick, according to the plans prepared by their architect.——A lighthouse is in the course of construction at Kinsale-head, to supersede the present light on the old head. The new tower will be on a more prominent sea point than the present.

PASSAGE OF WATER THROUGH PIPES.

The explanation of your correspondent, Mr. Ryde, places the question of the flow of water through pipes, &c., in a greater dilemma than ever.

Hawksley's formulæ, he must be aware, have been often condemned, by certain parties, as exhibiting something like one-third less results than their practice dictates, and yet, according to Mr. Ryde's explanation, the practical experiments of the Commissioners of Sewers serve rather to corroborate Hawksley's calculations, as well as those of Beardmore subsequently made, and which approximate very closely to those of Hawksley.

All that appears, then, to have been established by the expensive experiments of the Metropolitan Commissioners of Sewers is that a main pipe, with five junctions at intervals, discharges a greater quantity of water than without them, a fact very well known before to hydraulic engineers, for this simple reason, that by the increase of hydraulic pressure you increase the flow of water in certain ratios.

That Mr. Ryde's reasoning and explanation differ from several authorities will appear evident by a few extracts from the Report of the Board of Health on Metropolitan Water Supply. At page 173, Mr. Medhurst states, as the results of some experiments he had been directed to make, that a 6-inch pipe, with an inclination of 1 in 100, will discharge 63½ cubic feet of water per minute (*not a word about junctions*), while the result, according to Hawksley's formulæ, is only 40¼ cubic feet per minute (Beardmore's, 41·6). Again, he states a 4-inch pipe gave 23 cubic feet, the formulæ only 14·7 cubic feet (Beardmore's, 15). Again, he states a 3-inch pipe gave 11½ cubic feet, the formulæ 7·0 cubic feet (Beardmore's, 7·3).

In the next page he states that a 6-inch pipe, with a fall of 1 in 800, gives, by Hawksley's Tables, 14·2 cubic feet per minute (Beardmore's, 14·3), while his own experiments produced the result of 47·2 cubic feet per minute.

Phillips, in his evidence before the Metropolitan Sanitary Commissioners, 1847 (page 57 of report), states that Hawksley's formulæ for town drainage give sizes from three-and-a-half to five times greater than he found necessary in practice. In this opinion he was supported by the evidence of Austin, Roe, Ranger, and others.

I am quite aware that all that is known upon the subject of the discharge of fluids through pipes, &c., are the deductions drawn from the

theories and experiments of Eytelwein, Prony, Dubuat, Genieys, Young, Smeaton, Leslie, and others, and latterly by Hawkesley, Beardmore, and the Metropolitan Commissioners of Sewers, and all with pure water through pipes, &c.; but Mr. Ryde must not tell me that highly concentrated sewage, containing from twenty to thirty per cent. of solid matter, will flow as freely and without obstruction through pipes or sewers as pure water, because my experience has long convinced me to the contrary. This simple fact, it appears, is alluded to by Mr. Hale in his communication to the *Mechanics' Magazine*, wherein he says, "The conclusion arrived at is, that the requisite sizes of the drains can be determined near enough for practical purposes, as an important circumstance has to be considered in providing for the deposition of solid matter, which disadvantageously alters the form of the aqueduct, and contracts the waterway."

He further says, "It should be mentioned, that in the case of the 6-inch pipe which discharged 75 cubic feet per minute, the length being 100 feet, the lateral streams had a velocity given to them of a few feet per second, although he does not mention what that velocity was, which would have a sensible effect on the volume of water discharged; and the junctions," he says (five in number), "were placed at an angle of 35 degrees with the main line of pipe."

I do not think that experiments that were conducted under such arbitrary rules and regulations can be considered very trustworthy as data, when we take into consideration the ever-varying general principles and systems of town drainage. BAYLIS.

WIDENING OF CHANCERY LANE.

MR. TAYLOR, of Chancery-lane, to whom the public are chiefly indebted for a determined endeavour to improve the opening, has published in form of a pamphlet what has been recently written on this subject in the daily papers and THE BUILDER. We have had a view of the present state of things at this narrow bottle neck, as the *Daily News* has graphically described it; and certainly there is nothing more wonderful in the disproportionate issues from a conjuror's bottle, than the disemboguement of cabs and omnibusses through this narrow strait. The present opportunity of abating such a nuisance could not have been more favourable, though it had been purchased expressly for the purpose at an expense of 30,000*l.* or 40,000*l.*, as such an opening will certainly cost hereafter, if the present opportunity be not seized on, as it ought to be, in order to effect the same improvement now at less than a twentieth part of that cost. It has been urged that the west side of the lane is that which ought to be widened, and not the east, the corner of which is at present cleared for building; but besides the evident fact that a widening of both sides is desirable, there is a good reason why the east side in particular ought to be widened and rounded off. It will be found that the main bulk of the traffic is in omnibusses, cabs, &c., the usual route of which tends all to the east in issuing from the lane into Holborn, Gray's-inn-lane, &c.; and *vice versâ*, it is chiefly those vehicles just before chocked up in Middle-row, Holborn, which press into the lane on the east side. Here, then, there is urgent reason to widen and round off the street at the very spot now cleared; and as for the additional couple of *houses*, if such rubbish merit so respectable a title, that would require also to be set back or refronted, they are already in a perfectly ruinous state, as officially reported on, and one of them has a shore as an ornamental pillar in the middle of its one pair front, besides two or three more behind. Mr. Taylor has lately addressed the benchers of the Society of Lincoln's-inn individually, and Prince Albert, as their chief, upon the subject, but it will not be till the 2nd proximo that an official opportunity occurs for its consideration. It is earnestly to be hoped that it will not be then too late. We willingly paid a tribute to Lord Radnor's liberality in giving up a small area at the back of one of the houses; but we regret to find it said that "He refused to treat with the Commissioners for the ground previous to the lease being renewed, and until he had secured his improved ground-rent, and increased the value of the ground in the lessee's estimation, and to the public 500*l.* to 2,500*l.*, and perpetuated a nuisance which it was in his power to remove without injuring himself or his successors, for the Paving Board would cheerfully have paid full value for the ground, so that instead of a boon we have to thank him for a bone of contention." It is only eight feet of ground in front of a single tenement, tapering off from one or two more, that is wanted to convert a single-wheel way into a double one throughout the whole of the street, and although the principal lessee has been advised to ask 2,000*l.* for the whole, or 850*l.* for the half of it, doubtless the sum offered by the paving commissioners,—namely, 750*l.* for the whole,—would be found to go great way towards the sum that would ultimately be accepted. It will be a lasting disgrace to more than one party if so pitiful a sum by comparison with such a benefit should not be realized without more ado. A week of further delay and it may be too late, even with increased resources. Why Lord Radnor should not do it all himself for the mere self-interested improvement of his own valuable property in this lane, let alone the public benefit, it is hard to see: an enlightened self-interest would certainly prompt such an issue.*

MEMS. PROVINCIAL.

PLANS are about to be got for a market at Clifton.——The Birmingham Gas and Coke Company, and the Birmingham and Staffordshire Gas Company, have announced reductions of price in their gas, the new prices, from January next, to range from 5s. 6d. to 3s. 6d. with five per cent. discount for prompt payment. Since the previous reductions there has been "an increasing consumption of gas," as acknowledged by both companies.——The Salford guardians propose to build a new workhouse.——The ratepayers of the township of Pendleton, Manchester, are memorialising the magistrates in favour of the erection of a new bridge over the Irwell, in place of the present suspension-bridge.——A chimney at Stockport, 85 yards in height, was recently struck by lightning, and one of the angles from the top downwards, about 20 to 25 yards, "cut off as with a chisel."——The Liverpool United Gas Company have had a spacious new building for offices, workshops, &c., erected by Messrs. Haigh, of London-road. It is in the Venetian style, and presents to Newington a frontage of 108 feet. This façade is divided into two heights, the lower portion being rusticated work at the ends, and the centre part forming an arcade of seven divisions, receding nearly six feet. The arcade pilasters are oblong on the plan, sunk on the flanks, having moulded bases, capitals, archivolts, and keystones. The centre, slightly projecting, is carried up two stories in height, and receives the masonry of the upper windows, with columns, pilasters, entablature, &c. The block of the building is finished with a stone cornice. The three centre divisions of the arcade form the entrance into the interior by a flight of steps continued in front of these divisions. This approach, and the area in front, are protected by a dwarf fence wall of stone, perforated for the admission of light to the basement, and completed with ornamental iron balustrades. Stone pillars are introduced into this fence wall for lamp supporters.——A movement is in progress for the formation of a new market at Hulme.——Both of the Leeds gas companies intend reducing the price of their gas from 5s. to 4s. 6d.——At Darlington, the bridge across the Skerne, leading to the new park, is now finished, and the committee have offered a premium for the best design for laying out the grounds, about 20 acres in extent. The baths, too, are making rapid progress, the contracts for the remainder of the works having been let.——The Small Tenements Rating Bill, says the *Gateshead Observer*, has raised the valuation of the Monkwearmouth Shore from 8,477*l.* to 15,344*l.*, and reduced the rate from 15d. in the pound to 8d.——A school for boys and girls has been completed at Layer Breton, Essex, at the sole expense of the Rev. Robert Wooding Sutton, the rector, under the direction of Mr. Watson, architect; together with a master's and matron's house, play-shed, &c. The style is that of Tudor Domestic architecture. The school has an open timber roof, stained and varnished; the walls of Portland cement, jointed; and it is heated by the pyro-pneumatic stove-grate. A sufficient space of ground is attached and planted, with space for a gymnasium, enclosed in front by an open ornamental wall, piers, &c.

* A circumstance which has since transpired, namely, that a former paving board had been negociated with by Lord Radnor for a portion of the ground, but could not entertain the application on account of *the expense*, would seem to require notice; but it very little, if at all, affects the force of what we have now said.

THE IRON TRADE.

THE beginning of the end appears to be already in advent. "Just now," says *Aris's Gazette*, "there are no prices: it is useless any longer to conceal the fact—the iron trade is in a most deplorable state—the work of ruin has been going on for months to an extent not hitherto dreamt of; and, unless something speedily be done, or some change take place, the perilous condition of some most respectable concerns is such, as to place them beyond redemption. In this district the make for months past has been comparatively trifling, and the only hope for it now is to put a very large additional number of furnaces out of blast: the extent to which this will spread misery and pauperism amongst the improvident workmen it is almost impossible to estimate. The Welsh masters will go on producing until a sterner power compel them to hold their hand. The mischief already done in Scotland is so great that the final catastrophe cannot be very far distant: the production goes on with almost unmeasured pace: the price of the commodity has been as continually declining; and the amount of the overdrawn banking accounts is said to be enormous. A very general report is current that a single house in Scotland is in the hands of trustees for liabilities to the extent of no less than 800,000*l.* With such a type of the desperate condition of the iron trade, it is scarcely possible to predict what disasters are at hand." Thus it ever is: the Staffordshire masters would have the Welsh and the Scotch to give up the ruinous contest: lately the Welsh wished the Staffordshire to do so. Every one looks to his neighbours as the cause of all the mischief. But it is a fact, seemingly, that a mad increase of activity is being displayed in South Wales: works closed for four years are being reopened: increased numbers of men have already been employed, surveys undertaken, tramways formed, fresh levels opened, pits aired and ventilated! As for the last of these operations, there need be no hurry: there will be plenty of time to ventilate and air the pits: tramways out of all this mess are much more necessary: so are rational surveys of the present and prospective state of things, and levelling of a very *fresh* and new description indeed. The bond of brotherhood by which the masters professed to be united at quarterly meeting time has been also rent asunder in the general dissolution, or rather the nominal price system is now fully and freely acknowledged to have been but a rope of sand. "*For a considerable time past,*" says the *Birmingham Journal*, "the impression has been very general that the official declaration of prices made at the quarterly meetings of the ironmasters was a mere formality, not binding upon those consenting to these rates, but a convenient maximum from which discounts might be made according to the necessities of the seller, or any other modifying circumstance. * * * The absence of any definite result at the late meetings, and the issue of a circular by Messrs. Thorneycroft, on Monday last, have completely broken the *prestige* which attached to formal agreements about prices." That *prestige* was broken long ago. At a time when the quarterly dicta were quoted by every one as unquestionable authority, and when the masters were in the height of their imperious prosperity, we steadily exposed the hollow humbug of the system, and we may modestly claim the merit of having alone broken the prestige of such "nominal" prices. But latterly we ceased to war with those who came to rank with the unfortunate: our purpose was accomplished when the overweening conceit of a most "rampagious" *imperium in imperio* was taken out of it. It is now rumoured that the reduction announced by Messrs. Thorneycroft, of 10s. a-ton, with 10s. additional on commission, "is the

commencement of a general reduction by the large houses, with a view to limit the sales effected by small makers." Yes: the "small makers" were ever a thorn in the sides of the "great masters," and thus it now is that the great masters are to be a deadly thorn in the vitals of the small and helpless, and that, as we lately said, "the weakest will go to the wall, and the longest purse prevail."

WIDE ESTIMATING.

The following is a list of tenders received on Thursday last by the Directors of the London Conveyance Company, for new stabling for 200 horses, viz., twenty stables each for ten horses, and all exactly similar, to be built at the Westbourne Park, Paddington, under Mr. Pink, architect. The work consists of merely plain brickwork, &c., and the buildings only in part two stories high; and therefore one would imagine the value of the work could be arrived at with the greatest accuracy, especially as all the parties had *the same quantities*. Behold the result! A.

Jay and Co.	£6,333
Hughes and Co.	5,210
Hayward	5,199
G. Bird	5,129
T. Wilson	4,718
R. Thomas	4,075

Pray publish in your next paper the following tenders for repairs of two houses, Hanway-street, for Mr. Prowse:—

		For boarding and slating roof.
Potter	£149 10	£25
Roper and Son	97 10	25
Gilham	94 12	15
Smith and Son	79 10	14

SUBSCRIBER.

The highest and lowest tenders for general repair to the Wesleyan chapel and premises, City-road, Mr. Pocock, architect, were—

Pickering	£560
Higgs	309

What is to be done? B.

Miscellanea.

The Sculpture of the West End of Wells Cathedral.—In the nine tiers of sculpture (says Professor Cockerell in a letter read at the last meeting of the Somerset Architectural Society) we have, first, nearest the ground, the foundation of all, the Prophets and Apostles,—"The glorious company of the Apostles praise Thee." In the second, the Angels, —"To Thee all Angels cry aloud." In the third, from the Creation to the Patriarchs, and the New Testament,—"The holy Church throughout all the world doth acknowledge Thee." The fourth and fifth, the historical tiers (so deeply interesting), may be included in this "Holy Church." The sixth, seventh, eighth, and ninth illustrate our belief, "That Thou shalt come to be our Judge," in the presence of the Apostles and the nine Angels, and the Resurrection subjects, full of pathos and expression. Over the door we are reminded—"When Thou tookest upon Thee to deliver man, Thou didst not abhor the Virgin's womb." See also the soffete of the arch, The Ten Commandments. The historical (a surprising series) will be of the deepest interest, and the learned will not fail to recognise, for example, on the spiritual side, Ina, the First Founder; Edward Elder; the five Archbishops translated before 1200, from Wells; Brithelmus especially, *holding his Pallium*, and yielding it to King Edgar. The Bishops of Sherborne and of Wells. On the temporal side Edgar, without his crown; Athelstan; Alfred in the centre, the sun of this galaxy; Ethelfleda withdrawing the nuptial ring from her finger, &c., &c.; Edward Confessor; William the Conqueror; and Robert Courthose, *lifting up his cloak to show you his short legs*. All these, as proofs of identity, together with the regular succession which the catalogue exhibits, and the many other evidences the observer cannot fail to acknowledge, will, I think, satisfy every reasonable person on the correctness of my interpretations—the subject of long and so many delightful visits and contemplations in Wells.

Whitechapel Sanitary Association.—A meeting of the Whitechapel Association for the Promotion of the Health, Comfort, and Cleanliness of the Working Classes, was held last week. The Rev. Mr. Champneys, rector of the parish, in the chair. The report dwelt at some length on the evils arising from an insufficient supply of water, which in Whitechapel would seem to be most defective and destructive. In the district, inhabited by 7,000 persons, there were 91 courts and streets badly paved. A great number of the houses were so dilapidated as to be wholly unfit for human residence, most of them being swamped in heavy rains. Several landlords, however, had agreed to co-operate with the society to remedy this evil. The report adverted to the frightful state of the lodging-houses in the district—in one of them 37 persons were crowded together in a space of 10 feet square —men, women, and children, all nearly naked. The smell was intolerable, and to add to it a large tub of ordure stood outside the door. The Board of Health state that 700 cubic feet of fresh air is absolutely necessary for life, while the inspectors of prisons allow 1,000 cubic feet for criminals; but these poor people had only 20 cubic feet each to breathe in. The subject, therefore, demanded the interference of Government. The report, which also suggested the appointment of a qualified parochial inspector, was unanimously adopted.

Roads in France and England.—The report of M. Darcy, divisional inspector of the Ponts et Chaussées, who has been to England to obtain information relative to the macadamized roads, has just been published. In this work we find the following particulars relative to the population, extent of the streets, &c., in Paris and London:—The total surface of London is 210,000,000 of square metres; its population, 1,924,000; number of houses, 260,000; extent of the streets, 1,126,000 metres; extent of the streets, not including the foot-pavement, 6,000,000 metres; extent of the sewers, 639,000 metres. The total surface of Paris is 34,379,016 square metres; population, 1,053,879; number of houses, 20,526; extent of the streets, 425,000 metres; surface of the streets, exclusive of the foot pavement, 3,600,000 square metres; length of the sewers, 135,000 metres; surface of the foot-pavement, 888,000 metres. Thus, in London every inhabitant corresponds to a surface of 100 metres; at Paris to 34 metres. In London the average of inhabitants for each house is 7½; at Paris, 34.

Dover Harbour of Refuge.—With reference to the damage recently noticed by us, Lieut. Col. Yule, of the Royal Engineers, says, "In Volume VIII. of the *Professional Papers of the Corps of Royal Engineers*, I suggested and afterwards made experiments, to show that, for protection to such works while incomplete, if one spar can be so anchored, in imitation of reeds, as to resist the force of waves, so can hundreds, or any number: by means of numbers, as yet indefinite, still water will certainly be obtained. The late Admiral Sir Edward Owen informed me that, during a storm in one of the lakes in Canada, he found shelter to leeward of reeds. Supposing that the necessary number of spars were ascertained, they might be placed round a portion of the wall to be raised, and when that is completed, they can be taken up and anchored again at very little expense around the site of another portion of wall." It appears, however, that the damage in the present instance did not affect the wall, but was confined to the contractor's piles, cranes, and diving-bells.

Steam Travelling Cranes.—This problem, says the *Artizan*, has been satisfactorily solved by Messrs. M'Nicoll and Vernon, of Liverpool. One steam crane has displaced two of the ordinary hand travelling cranes, which employed four men each. The following experiment will enable persons to form an accurate idea of its capabilities. Thirteen logs of timber, containing 1,050 cubic feet, were piled in a cess at one side of the yard. A plot of ground on the opposite side, 100 feet distant, was cleared. At one o'clock precisely the crane started, travelled 100 feet to where the timber was lying, hoisted a log, returned to the place whence it started, and deposited it on the ground in exactly two minutes. It immediately proceeded on a second journey, and at precisely four minutes ten seconds after one o'clock it deposited the second log. The remaining logs were, one by one, conveyed over the distance, and in twenty-seven minutes thirty seconds the logs had been removed and piled in a cess at the opposite end of the yard. The average weight of the logs was 30 cwt., the total weight 19½ tons, allowing 54 cubic feet to the ton. The machine had travelled 2,600 feet, or within forty feet of half a mile, for half the distance carrying a load of 30 cwt., in addition to its own weight, besides having made 26 stoppages. During the whole of the operation only two persons were engaged,—the youth who directed the machine, and the man who fastened on the logs.

The Nelson Column.—Workmen have commenced preparations for fixing the third bas-relief illustrative of the battle of Cape St. Vincent, on the pedestal of the Nelson column. How much longer is the column to remain in its present unfinished condition?

Portland Harbour and Breakwater.—By the last Act of last session of Parliament, it is provided that out of a sum of 20,000*l.* paid for one of the harbour estates, 1,000*l.* shall be laid out towards constructing wells, pumps, and other works, for supply of water to the island of Portland. A further sum of 1,000*l.* invested for the Royal Portland Dispensary; 4,000*l.* towards the reduction or extinction of tolls on foot passengers at Portland Ferry-bridge; and the remainder applied towards schools, school-buildings, and teachers in the island, according to the direction of the Chief Commissioner of Woods and Forests.

Leicester Literary and Philosophical Society.—The opening meeting of the present session took place on Monday in last week, Dr. Shaw, a new president, in the chair, when various gifts were presented, and amongst them, from the working classes of Leicester, a marble bust of Sir Robert Peel, purchased at a cost of a hundred guineas. Mr. Hollings stated that the archæological section of the Society had uncovered five or six feet of a Roman pavement in a cherry orchard, which he hoped to see transferred to the Museum: the Society had voted 10*l.* towards its removal. Dr. Shaw then read a paper on "The Character of the Literary Taste of the Day," in which he deprecated diffusiveness of study and pursuit as destructive of everything great, original, or creative in thought; and however laudable it was to popularize knowledge, he was of opinion that the results were rather imposing than salutary.

Liverpool Architectural Society.—On the 16th inst. a meeting of this society was held at the Royal Institution, Mr. Charles Barber presiding. Several donations to the library were announced. Mr. Laker read a paper on "The Curve in Gothic Architecture."

Bedfordshire Architectural and Archæological Society.—A general meeting of this society was held at the Bedford Library on Wednesday in last week, Col. W. B. Higgins in the chair. Some new members were elected. The Rev. W. Airy called attention to a proposal for the union of five societies for publication of proceedings, which the meeting adopted on his motion. A grant of 10*l.* towards the repair of Dunstable Priory Church was made. The report of the council was then read and adopted, after which the Rev. B. E. Bridges read a continuation of his paper, "On some Distinctive Features of Christian as contrasted with Classical Art," and the Rev. W. Airy one "On the Solemn League and Covenant," illustrated by the exhibition of a copy subscribed at Swineshead, at the time of the rebellion, and which he had himself found hidden under a beam in the roof of the rectory-house.

Glass-making: Neglect of Work.—A "gatherer" to one of the "blowers" at Messrs. Chance's establishment, at Handsworth, complained of short payment of wages, 1*l.* 16s., for which he summoned the firm, who, in defence, urged that he had been properly fined for short work, according to agreement, a circumstance attributable to wilful neglect, in consequence of not having been promoted, after fifteen years' service, to be a "blower." The complaint was dismissed.

The Great Bull from Nineveh.—This valuable relic of antiquity has been safely deposited in the British Museum. It is in good preservation, stands nearly 12 feet in height, and weighs upwards of six tons.

TO CORRESPONDENTS.

Indurating Plaster of Paris.—A correspondent asks how decorative works in Plaster of Paris may best be indurated and made to assume the aspect of marble.

"Basilisk," "E." (we are compelled to refuse), "S. C. F.," "An Old Admirer," "A Young Lady," "Messrs. B.," "Capt. M." (next week), "P. P." (anonymous opinions are worth nothing), "E. T.," "A. B. C.," "An Old Engineer," "W. H." (very well), "L. H." (next week), "G. F. J.," "T. H. W.," "Tba," "S. S." (shall see the drawing), "J. G. H.," "J. F. W." (we are compelled to refuse giving addresses), "Zeta," "S. L.," "W. C." "The Temple; an Essay on the Forms of the Ark, the Tabernacle, and the Temple of Jerusalem." By E. C. Hakewill, architect, 1850. "On the Construction of Locks and Keys." By John Chubb, London. "An Essay on the Science of Pronunciation," dedicated to her Majesty. "Public Opinion," (London, King and Co.) "The Exhibition explained." By John McArthur. "London Pageants." By J. G. Nichols, F.S.A.

"*Books and Addresses.*"—We have not time to point out books or find addresses.

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ADVERTISEMENTS.

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This day is published, in 8vo. with numerous Illustrations by Messrs. O. Jewitt and H. Shaw, price 8s.
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WHITTAKER and CO., Ave Maria-lane, London; and to be had of any bookseller.

PREPARATIONS in GERMANY for the EXPOSITION of 1851.—In the ART-JOURNAL for November will be found a Tour of the Editor in Germany, and a Report concerning the state of the Industrial Arts, and the preparations there making for the Exhibition of 1851.

THE ART-JOURNAL for NOVEMBER contains an Engraving on Steel of the Marble Bust by Mr. Durham of Miss JENNY LIND, with two Engravings from paintings by Wilson and Wilkie in the VERNON GALLERY.

THE following LETTER has been circulated by the Editor of the ART-JOURNAL among the Manufacturers of Great Britain, the continent of Europe, and America:

SIR,—I beg to apprise you that I am now actively arranging to report very fully the Exhibition of the Industry of all Nations to be held in London in 1851—by describing and illustrating by fine Engravings on Wood all the more prominent and meritorious objects contributed by Manufacturers: I design to issue Supplementary Parts (or double numbers) of the ART-JOURNAL, each Part to consist of at least 52 quarto pages, and containing between 250 and 300 Engravings.

These Engravings will be produced without cost to the Manufacturer.

It will be only necessary for the Manufacturer to supply me with drawings of the principal objects he designs to exhibit, together with such information concerning his establishment as it may benefit him to communicate; but it is essential that these drawings be received at the earliest possible period, in order that they may be in all respects worthily executed and carefully printed.

When these illustrated Reports have been issued with THE ART JOURNAL, they will be collected into a Volume, which Volume will contain probably more than a Thousand Engravings, and become—as a Catalogue of its most beautiful and valuable contents—a permanent record of the Exhibition, and a key to the most meritorious Manufactures of all parts of the world.

I have already visited the several States of Germany, and am about to visit Belgium, Holland, and France, and other countries, in order that these Reports may be as perfect as possible.

If you will be so good—with as little delay as your convenience will permit—to communicate with me on this subject, you will essentially forward my plan, and enable me to do justice to your productions by obtaining Engravings of them in time to secure accuracy of copy and delicacy of finish. It may be well to add, that none of the Engravings will appear until the 1st May, 1851.

I have the honour to be your faithful Servant,
THE EDITOR OF THE ART-JOURNAL.

EXHIBITION of the WORKS of INDUSTRY of all NATIONS, 1851.—Messrs. DAY and SON, Lithographers to the Queen, beg to announce the publication of a large and beautifully executed Print, in Treble-tinted Lithography, of the GREAT BUILDING for the EXHIBITION of 1851. Size, 38 in. by 13 in. On paper, 45 in. by 22 in. The View is Lithographed from Drawings made by Messrs. DAY and SON, for Messrs. FOX, HENDERSON and Co., the contractors for the building; and is an identical copy of the presentation proofs issued by those gentlemen.

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See Priced List Advertisement, Saturday, June 15.

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(COPY.)

"Manchester, October 7th, 1850.

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"Yours, very respectfully, J. F. BATEMAN."

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Messrs. ORSI and ARMANI,
For the INTERIOR of CHURCHES, MUSEUMS, HALLS, VESTIBULES, CONSERVATORIES, &c. &c.; for Foot Pavement, Flooring, Covering Railway Arches, Terraces, Roofs, &c. &c.
SAMPLES LAY FOR INSPECTION. List of Prices, and every Particular, may be obtained at the Office, 6, Guildhall-Chambers, Basinghall-street, City; and at the Office of "The Builder."

LIGHT, CHEAP, and DURABLE ROOFING.—CROGGON'S Patent Asphalte Roofing Felt, and inodorous Felt for damp walls, sold in rolls 28 inches wide, 1d. per square foot; also Dry Hair Felt, for preventing the radiation of heat, and deadening sound; and sheathing for ships' bottoms, on which the copper lies smooth. Samples, directions, and testimonials sent by post.—CROGGON and Co., 2, Dowgate-hill.

ASPHALTUM for SALE.—About sixty tons of PITCH, just imported from Trinidad.—Apply to Messrs. POPPLEWELL and WALLIS, 45, Lime-street, City.

IMPORTANT TO OIL AND RAILWAY GREASE MERCHANTS AND FACTORS.

FOR SALE, at the Works at Weymouth, or may be delivered to any part of the kingdom, the superior product by distillation of BITUMINOUS SCHALE, or SCHISTUS, "LIQUID BITUMEN," containing, 1st, a Volatile Oil, or Mineral Spirit; 2nd, an Oil of a greater density; 3rd, a Fatty Mineral Oil; 4th, Paraffine; 5th, Grease, slightly alkaline; 6th, Tar. The Volatile Oil, or Mineral Spirit, is admirably adapted as a solvent, and may be used for all purposes to which the most highly rectified spirit of turpentine is employed, or may be used for spirit and camphine lamps. The second oil, not so very volatile, will dissolve in any proportion with seed or fish oils, of which it considerably augments their illuminating power, and prevents their becoming rancid. The third is admirably adapted for lubricating machinery, and contains—the 4th, Paraffine, which is easily obtained by crystallization, and requiring but little treatment to make excellent candles. The 5th, Grease, superior to animal oil or fat for the use of carriages. The 6th, Tar, perfectly black, very siccative, and which may be used generally for all purposes of varnish, and where mineral tar is employed.—Any further information may be obtained either of Mr. W. C. HOMERSHAM, Schiste Works, Weymouth; or of Mr. C. F. CHEFFINS, 11, Southampton-buildings, Chancery-lane, London.

BLUE LIAS LIME, PLASTER, &c.

THOMAS FREEN and CO. having connected with their ROMAN CEMENT WORKS an extensive Manufactory of GROUND BLUE LIAS LIME and PLASTER of PARIS, beg to call the attention of Builders and others to the very superior quality of these articles, which they are prepared to supply upon the most reasonable terms.
WORKS—Tuscany Wharf, Regent's Canal, Kingsland-road, London.
DEPOTS—Lee's Wharf, Paddington; and Phœnix Wharf, Greenwich.
N.B. Grey and Chalk Lime, Paving Bricks, Tiles, Artificial Stone, Plasterers' Hair, &c. &c.

GREAVES'S BLUE LIAS LIME and CEMENT.—AGENTS.

Messrs. Freeman and Richardson,	6, South-wharf, Paddington.
Mr. T. Wylie	Liverpool.
Wm. and E. Knight	Manchester.
Mr. G. Brown	Glasgow.
Mr. J. Harrison	Chester.
Mr. E. Cryer	Oxford.

Gibbs, Cannings, and Co.'s Glazed Pipes, Bricks, &c.

TO BUILDERS, CONTRACTORS, AND OTHERS.

GREAVES'S BLUE LIAS LIME and CEMENT, direct from the works, Stockton.—RUTTY and VEREY beg to inform the Trade that they continue to supply Blue Lias Lime and Cement as usual at No. 2, Wharf, Paddington, only. Also Glaze Drain Pipes.—N.B. No other lime kept at the wharf.

GREY-STONE LIME.—HALL, Brothers, Mersham Lime Works, near Reigate, beg to offer to Builders and others a list of their prices for Cash on delivery.

Grey-Stone Lime	6s. 0d.	per Yard, or 22	Bushels.
Ditto, for Manure	4s. 0d.	ditto	ditto
Ditto, Ashes	1s. 6d.	ditto	ditto
Black ditto	3s. 0d.	ditto	ditto

In not less than Six Yard quantities, and put on the Railway for all goods stations on the London and Brighton, and South-Eastern Railways, or lines connected with them. A fresh supply hot from the kilns daily, at the Bricklayers' Arms and Croydon Stations, and delivered to all parts.
Prices for Cash on delivery:—7s. per yard at the stations or works; 8s. per yard delivered within five miles; in not less than 2-yard quantities. Booking, 2s. per yard; 1s. per yard off if paid monthly. Collecting charged for. The Quality is warranted to be the Best.—Address Mersham, near Reigate, Croydon; or Youl's-place, Old Kent-road.

ATKINSON'S CEMENT.—This Cement has hitherto been manufactured in Yorkshire, and, through long detention at sea, has often proved stale and unfit for use on its arrival in London. By the arrangement now made, the Cement will be manufactured in London, and thus presented to consumers in a fresh and genuine state, by the sole Agents, J. B. WHITE and SONS, Millbank-street, Westminster.

KEENE'S and PARIAN CEMENTS, for internal stucco, are employed very advantageously in place of wood for skirtings, architraves, and panel mouldings, and for in-door flooring, instead of stone. The peculiar properties of PARIAN Cement allow of its being painted or papered upon within a few hours of its application, and thus render it an important substitute for common plastering in those cases where expedition and beauty of finish are essential.—J. B. WHITE and SONS, Millbank-street, Westminster, Patentees of KEENE'S Cement, Licensees of PARIAN Cement.

PORTLAND CEMENT, as manufactured by J. B. WHITE and SONS, possesses all the properties of the best Roman Cement but has the advantage over that material of wholly resisting frost. When used as a stucco it does not vegetate or turn green in damp situations, and requires no colouring. Employed as an hydraulic mortar for brickwork, it carries four to five measures of sand to one of cement, and is proved by trial to become harder and stronger in these proportions than Roman Cement with but one measure of sand. This superior connecting power, combined with its eminently hydraulic properties, point it out as the fittest material for building sea and embankment walls, the lining of reservoirs, cisterns, and baths, and for all those purposes where strength and a perfect resistance to water are required.
Manufacturers—J. B. WHITE and SONS, Millbank-street, Westminster, and 36, Seel-street, Liverpool.

PORTLAND CEMENT, solely MANUFACTURED by WILLIAM ASPDIN, Son of the Patentee.—Messrs. ROBINS, ASPDIN, and Co. request reference to No. 256, page 491; and also Nos. 284 and 285, pages 343 and 351 of "The Builder," for accounts of EXPERIMENTS on the strength of Portland Cements, whereby the great superiority of their Cement is manifest. This Cement has been proved for upwards of twenty years in the Thames Tunnel to resist the action of water; it is stronger in its cementitious qualities, harder, and more durable than any other description of Cement; it does not vegetate, oxydate, or turn green; nor is it affected by any atmospheric influence whatever the climate, resisting alike the action of frost and heat. It is manufactured to set in from five to sixty minutes. For all purposes that Cement is applicable the Proprietors challenge competition.—Orders received by Messrs. ROBINS, ASPDIN, and Company, at their Manufactory, Northfleet, Kent, and their Wharf, Great Scotland-yard, Whitehall; also at their Depôt, 46, Hanover-street, Liverpool.

MARTIN'S PATENT
FIRE-PROOF AND ORNAMENTAL CEMENT,
APPLICABLE FOR
ALL INTERNAL PURPOSES WHERE PLASTERING IS REQUIRED.

This invaluable Cement has now been before the public so many years, and obtained so high a standing in the estimation of all who have used it, that it is unnecessary to comment on its merits. Messrs. STEVENS and SON however feel called upon to observe, that, from the greater extent of surface which a given quantity of MARTIN'S will cover, as compared with other Cements for internal use, there will be found a gain of 16½ per cent. in material, full 7 per cent. less in price, with an additional saving in labour of 10 per cent., by its allowing about forty minutes for working, being less than one-tenth of the time of other cements of a similar nature, therefore worked with greater facility, making together the enormous saving of full THIRTY-THREE PER CENT.; its advantages therefore cannot admit of doubt. Specimens, showing its beauty, hardness, and applicability to all plain and ornamental purposes, may be seen; and the Cement, in any quantity, obtained of Messrs. STEVENS and SON, at their Plaster and Cement Works, 186, Drury-lane, London.—Manufactory, Derwent Mill, Derby.
N.B. This Cement will receive paint or paper in a few hours after the completion of the work by the plasterers.

BELL'S PATENT LIQUID CEMENT is ready for use, and only one-eighth the cost of oil-paint. For beauty it is pre-eminent, giving the exact appearance of FINE CUT STONE. Can be used at once on fresh Roman Cement, or any other plastering, and will protect the walls as well as Roman Cement. In casks of 1, 2, and 3 cwt., at 8s. 12s. and 21s., casks inclusive.
PATENT MINERAL PAINTS,
Invaluable for cheapness, beauty, and permanence: not half the cost of other paints, always ready for use, will keep good for years, and therefore well suited for exportation. Brilliant black, 2s.; rich browns, 2s. 9d.; greens and light colours, 4s. per gallon.
G. BELL and Co., 2, Wellington-street, Goswell-street.

THE PARIAN CEMENT, for INTERNAL STUCCO.
No. 4, Porchester-terrace North, Paddington, 15th February, 1850.
Dear Sirs,—I have been reluctant to speak to the merits of Parian Cement, until sufficient experience enabled me to do so. As an extensive builder I have given it many trials, and now beg to express my perfect satisfaction with it. The house from whence I date was first inhabited by me on 7th September last, not a brick having been laid before the 1st of June!—that is to say, in three months and one week! I stuccoed the walls throughout with Parian; papered some, painted and marbled others; and the whole work has been dry and perfect from that hour. I need say no more.—I am, Gentlemen, yours respectfully,
WM. SCANTLEBURY.
Messrs. Chas. Francis and Sons, Nine Elms.

JOHNS and Co.'s PATENT PERMANENT STUCCO WASH, CEMENT, and PAINT.—The attention of the trade and the public generally is solicited to these very excellent and well-known materials, which, for their beauty, durability, imperviousness, and cheapness, are unequalled. THE PERMANENT WASH, as a substitute for common lime-wash or water-colour, is an article which has long been wanting for stucco and brick-work; it is of a stone colour, but may be tinted to any other; is perfectly dry in twenty-four hours; will not wash off; is very little dearer than the common washes; and, being a non-absorbent, is admirably adapted for railway stations, union workhouses, schools, barracks, prisons, &c. One cwt. is sufficient to cover, with two coats, 250 square yards. THE CEMENT, from the great reduction in price, and its suitableness for internal as well as external surfaces, places it above all other materials of its kind; it has no caustic qualities; may be painted or papered in a few days; never blisters, cracks, or vegetates; soon becomes as hard as stone; and may be cleaned with a brush and water. The merits of the PAINT are well known for its application to stucco work of all kinds, and external work generally. Numerous testimonials, prospectuses, and every information may be obtained, on application to the Sole Agent, PHILIP HARE, at the Warehouse, 22, Steel-yard, Upper Thames-street. A liberal allowance to wholesale dealers.

TO ARCHITECTS, BUILDERS, &c.

ALL DESCRIPTIONS of CEMENT and PLASTER CASTINGS executed in a first-rate manner, on reasonable terms, by J. HERBERT and SON, Modellers, &c., 42, Parker-street, Drury-lane. A splendid assortment of Corinthian, Ionic, and other Capitals, Centre Flowers, Balusters, Trusses, &c. Elizabethan and other Chimney Shafts.

CEMENT, PLASTER, and COMPOSI- TION ENRICHMENT MANUFACTORY, 18, Crown-street, Finsbury-square, London.—WM. SMART, Jun., begs to inform architects, builders, and the trade that he is prepared to execute works of any magnitude in first-rate style and finish at very low charges. Architects' designs carefully modelled and truthfully carried out, and estimates given on receipt of detailed drawings. &c.—Wm. SMART, Jun., ARCHITECTURAL MODELLER and ORNAMENTIST, 18, CROWN-STREET, FINSBURY, London. Established in the family three-fourths of a century.

THE PATENT ARCHITECTURAL ROOFING TILES are strongly recommended as an improved system of roofing, and, from their extremely light and elegant appearance, are peculiarly adapted for covering Churches, Parsonage-houses, Schools, Ornamental and other Villas. A material feature of these Tiles is their economy; they are as cheap as ordinary slating, and do not require stronger timbers. Every information may be obtained by application to the Secretary, at the Offices, No. 158, Strand, where specimens of the Tiles may be seen.

MARLE BRICKS, HAMMERSMITH, at FAULKNER'S Brickfield, Blythe-lane, Hammersmith-gate. Marle Cutters, Yellow Seconds, Pale Seconds, Paviours, and Pickings. F. FAULKNER begs to inform Builders he has now a quantity of the above superior Marle Bricks sorted, and can be delivered to any part of London. Grey Stocks, &c.

RED-FACING KILN BRICKS of superior colour and quality are now ready for delivery at Croydon station, on the Dover Railway, at 38s. 6d. and at any station beyond towards London, and at the Bricklayers' Arms station, at 40s. per 1,000.—Apply to the Foreman of the Brick and Tile Works, Mersham, near Reigate, or to the proprietor at Bell-street, Reigate. Specimens may be seen at the office of "The Builder," 2, York-street, Covent-garden.

WARD and Co., HONDURAS WHARF, BANK-SIDE, and JAMAICA COFFEE-HOUSE, CORNHILL, LONDON.
Fire Bricks, best, 65s. per thousand; Stock Bricks, 27s.; Country Pan Tiles, 50s.; Plain, 32s. 6d.; 12 and 9 in. Flooring ditto, very bright and red, Paving, Crown, and Circular Fire Bricks, Stourbridge, Newcastle, and Welsh Bricks; ditto Lumps, Tiles, Shield-guards, Pattern-goods; Clay, Loam, &c. of the best sort, and cheaper than any other house; Sand Ballast; Sanitary Pipes; Dutch and English Clinkers; Suffolk Facings, White and Red; Patent Malting Tiles, &c. Shipments to all parts of the world.

BRICKS.—In consequence of the low price at which Brickmakers have, for some time past, been purchasing Ashes and Breeze, H. DODD is enabled to offer his bricks, which are of good quality, at the following low prices; and as his fields are only a quarter of an hour's walk from the City, H. D. earnestly requests purchasers will favour him with a visit, in order to inspect his stock and to judge for themselves.

Marle Cutters	60s.	per thousand.
Yellow Seconds	52s. 6d.	„
Pale Seconds	50s.	„
Paviors	42s.	„
Pickings	36s.	„

Marle Place, Half-washed Stocks, and Place Bricks, at equally low prices. These bricks are sound, well burnt, and unusually free from defects; a very large proportion of the Stocks being suitable for external facing. They will be delivered at the above prices anywhere within two miles of the fields.
Apply to HENRY DODD and Co., at the Counting-house, Hoxton Brickfields, Grange-walk, near the Rosemary Branch, Hoxton.
N.B. Red Pit Sand, of approved quality, constantly on sale, upon reasonable terms. In the erection of walls, where it is desirable that the work should be kept as free from damp as possible, this sand, from its not containing any saline matter, is acknowledged to be preferable to river sand.

PAPER-HANGINGS, the cheapest in London, at CROSS'S Wholesale and Retail Warehouse, 29, Great Portland-street, where builders and the trade can select from a stock of 50,000 pieces, at the following reduced prices:—

Good Bed-room Papers	from 0½d.	per yard.
Painted Marble, Granite, and Oak Papers ..	from 0½d.	do.
Superior Dining and Drawing-room Papers,	from 1½d.	do.
Satins and Flock	from 2½d.	do.

PAPER-HANGINGS at E. T. ARCHER'S Manufactory for English, and Warehouse for English and French Paper-hangings, and all materials connected with the trade. The Panelled Decorations are fitted up on the walls of an extensive range of show-rooms, giving at one view a drawing or dining-room furnished fit for occupation.

LIST OF PRESENT PRICES.

Painted marble, granite, and oak papers	1d.	per yard.
Superior bed-room papers	1d.	„
Satin ground papers for bed-rooms, drawing and dining rooms	2d.	„
Flock papers on grounds, and crimson flock on oak	4d.	„
Bronze drawing-room papers	9d.	„
Rich gold paper	1s. 6d.	„
Ditto and Flock	2s. 0d.	„

10,000 feet of gilt mouldings always in stock.
E. T. ARCHER, 451, OXFORD-STREET, LONDON
January, 1, 1850.